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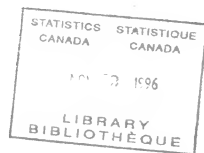


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# Agriculture, Climate and Population of the Prairie Provinces of Canada

A STATISTICAL ATLAS SHOWING PAST DEVELOPMENT AND  
PRESENT CONDITIONS

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## PREFACE

THE present study is based on the 1926 Census of the Prairie Provinces, and such supplementary data as are essential to an understanding of the nature and distribution of agricultural settlement in the Canadian West. The extent and direction of agricultural expansion have been influenced and in a large measure governed by prevailing physical and economic conditions. The types of farming practised in the region are also related to climate, soil, topography, capital, labour and transportation.

The first part of this survey, therefore, deals in a broad way with the basic physical controls and the extent to which they account for the existing systems of agriculture and the density and distribution of population. The second section traces the changes in farming since the beginning of the century and describes in detail the extent and condition of agricultural land and the distribution of field crops as at the date of the last census. A section is then devoted to a study of live stock and animal products; this in turn being followed by an analysis of farm incomes, farm expenditures and farm values. Another section deals with the size and tenure of farms and the concluding pages describe the distribution, nativity, origin, educational status and housing facilities of the population.

The material is presented by means of maps and charts which are supplemented with interpretive comments. The dot map is a convenient graphic device for showing the geographical distribution and density of production and population and for comparing farm values, incomes, and expenditures in different districts. Although the value of the dot is shown for each map, the choice of scale was made rather with a view to visual effectiveness than for easy computation of totals. The totals from which the maps were prepared are for the most part tabulated by municipality in the printed census volumes. In both the dot and shaded maps use was made of the smallest political or other divisions for which data were available. The volume has been designed to serve the purposes of the farmer, the prospective settler, the agricultural scientist, the business man and the student of Canadian economic geography as well as of persons concerned with settlement policy in the West.

The non-Canadian reader is reminded that when the Northwest was taken over by the Dominion of Canada (1870), Indian rights had to be compounded, land surveys made, law and order established and transportation facilities built. The government of the day addressed itself to these problems without delay. The first Indian Treaties were signed in 1871 and covered the original territory included in the province of Manitoba. Subsequent treaties acquired the Indian title to the territories to the west and north; the last, which dealt with the Athabasca and Peace River districts, was signed in 1899. By 1873, most of Manitoba was surveyed and a good portion of the territory immediately adjacent, and during the following years land surveys were pressed forward with remarkable rapidity. The Northwest Mounted Police were organized in 1873. In 1878, the first train arrived in Winnipeg over the Pembina line (Winnipeg to Emerson) which connected with the St. Paul and Pacific at the border; in 1886, the Canadian Pacific was completed to the Pacific coast. During the next fifteen years, immigration increased with moderate rapidity but with the turn of the century it began to assume unprecedented dimensions. From then onward western markets for eastern manufactured goods expanded by leaps and bounds and Canada's foreign trade was materially augmented by rapidly increasing cereal exports. The success or failure of the western wheat crop is now the most important annual event in the business life of Canada and the agricultural changes taking place in the West are matters of first importance to the economic life of the nation as a whole.

## ACKNOWLEDGMENTS

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DOMINION BUREAU OF STATISTICS,  
OTTAWA, Jan. 1, 1931.



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FIGURE 1

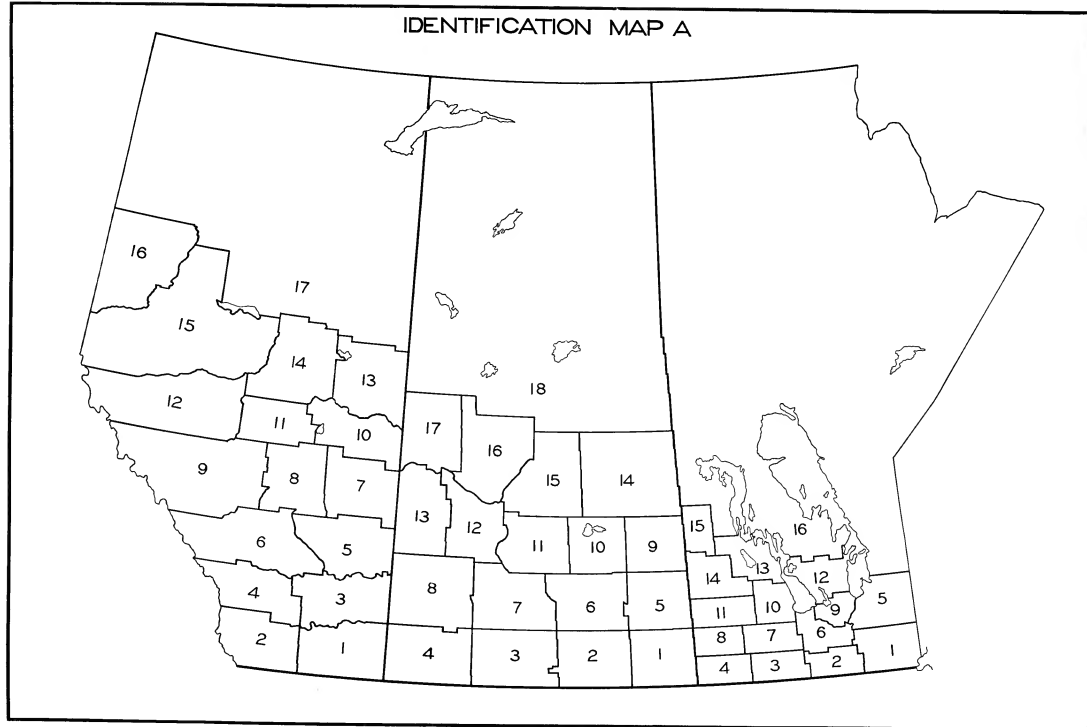


FIGURE 1.—The municipalities enclosed within these census divisions are listed in the index on pages 6 and 7 and pictured on the following Identification Map B.

FIGURE 2

## IDENTIFICATION MAP B

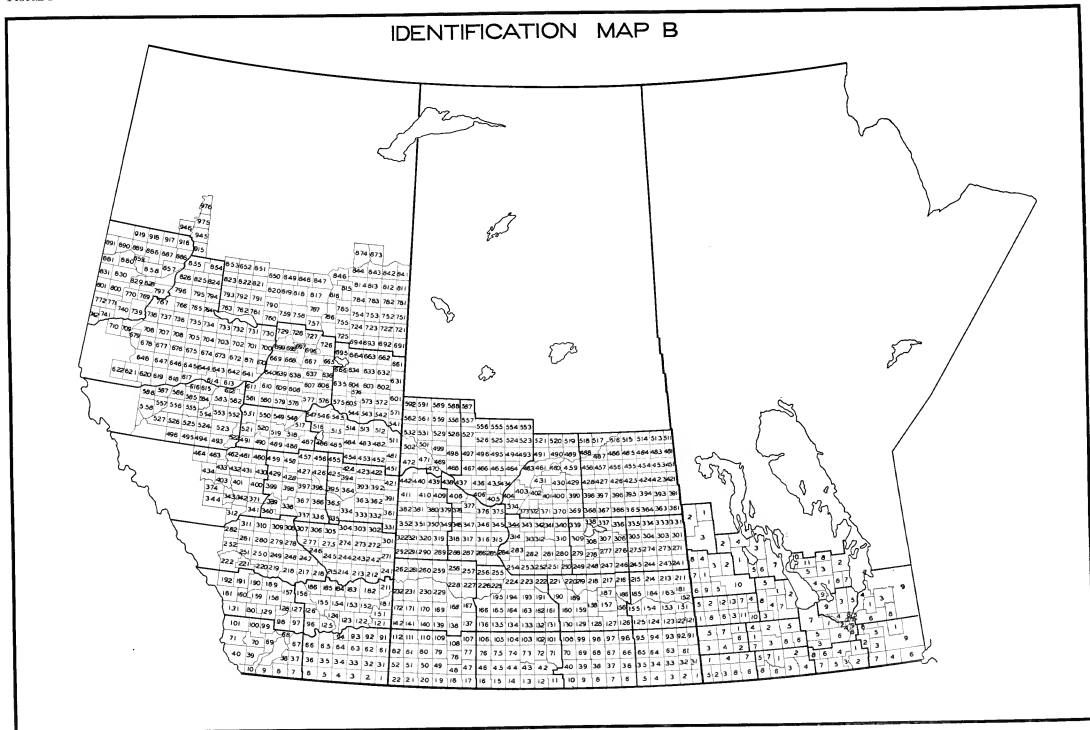


FIGURE 2.—Reference to the Index of Municipalities on the following pages will give the names of the municipalities mapped above. Each province has some unorganized territory and Alberta has a number of local improvement districts.

## INDEX OF MUNICIPALITIES

## DIVISIONS OF THE PRAIRIE PROVINCES FOR CENSUS PURPOSES

There being no fixed political divisions in the Prairie Provinces, corresponding to counties in eastern Canada, it has been found impracticable to compare, for rural parts, the data collected at any Census with that of a previous one for smaller areas than the provinces as a whole. To overcome this difficulty, the Bureau has divided the province for statistical purposes into "Census Divisions" each containing a certain number of rural municipalities, cities, towns and incorporated villages.

The following schedule gives the rural municipalities by name and number (the latter in parentheses), together with the cities, towns and villages comprised within each "Census Division."

## MANITOBA

**DIVISION No. 1.**—Comprises the municipalities of Birch River (1), Hanover (2), La Broquerie (3), Piney (4), Ste. Anne (5), Sprague (6), Stuartburn (7), Taché (8); *Unorganized parts East of the Principal Meridian between townships 13 and 19 (9).*

**DIVISION No. 2.**—Comprises the municipalities of De Salaberry (1), Franklin (2), Montclair (3), Morris (4), Rhineland (5), Roland (6), Stanley (7), Thompson (8); *Towns—Emerson, Morden, Morris; Villages—Gretha, Plum Coulee, Winkler.*

**DIVISION No. 3.**—Comprises the municipalities of Argyle (1), Lorne (2), Louise (3), Penhold (4), Riverside (5), Roblin (6), Strathcona (7), Turtle Mountain (8); *Towns—Killarney; Villages—Manitoa, Pilot Mound.*

**DIVISION No. 4.**—Comprises the municipalities of Albert (1), Arthur (2), Brenda (3), Cameron (4), Edouard (5), Morton (6), Whitewater (7), Winchester (8); *Towns—Boissevain, Deloraine, Harney, Melita; Villages—Napinka.*

**DIVISION No. 5.**—Comprises the municipalities of Brokenhead (1), Fort Alexander (2), Kildonan East (3), Lac du Bonnet (4), St. Clements (5), St. Paul East (6), Springfield (7), Victoria Beach (8), Whittemouth (9); *Unorganized parts East of the Principal Meridian between townships 9 and 21 (10); Towns—Beausjour, Transcona; Villages—Loyal.*

**DIVISION No. 6.**—Comprises the municipalities of Cartier (1), Charleswood (2), Dufferin (3), Fort Garry (4), Grey (5), Macdonald (6), Portage la Prairie (7), Ritchot (8), St. Vital (9); *Cities—Portage la Prairie, St. Boniface, Winnipeg; Towns—Carman, Tuxedo.*

**DIVISION No. 7.**—Comprises the municipalities of Cornwallis (1), Cypress North (2), Cypress South (3), Elton (4), Norfolk North (5), Norfolk South (6), Oakland (7), Victoria (8); *Cities—Brandon; Towns—Carberry; Villages—Wawanesa.*

**DIVISION No. 8.**—Comprises the municipalities of Daly (1), Glenwood (2), Pipestone (3), Sifton (4), Wallace (5), Whitehead (6), Woodworth (7); *Towns—Oak Lake, Rivers, Souris, Virden; Villages—Elkhorn.*

**DIVISION No. 9.**—Comprises the municipalities of Assiniboia (1), Kildonan West (2), Rockwood (3), Rosser (4), St. Andrews (5), St. Francis Xavier (6), St. James (7), St. Paul West (8), Woodlands (9); *Towns—Selkirk, Stonewall, Winnipeg Beach.*

**DIVISION No. 10.**—Comprises the municipalities of Glenella (1), Lakeview (2), Langford (3), Lansdowne (4), McCrery (5), Rosedale (6), Westbourne (7); *Towns—Gladstone, Neepawa.*

**DIVISION No. 11.**—Comprises the municipalities of Archie (1), Birtle (2), Blenheim (3), Clavellville (4), Elliot (5), Hamiota (6), Harrison (7), Minota (8), Minto (9), Odanah (10), Saskatchewan (11), Shoal Lake (12), Strathelair (13); *Towns—Birtle, Minnedosa, Rapid City; Villages—Foxwarren, Hamiota, Shoal Lake.*

**DIVISION No. 12.**—Comprises the municipalities of Armstrong (1), Bifrost (2), Chatfield (3), Coldwell (4), Erikdale (5), Fisher Branch (6), Gimli (7), Kreuzberg (8), St. Laurent (9), Siglines (10), Woodlea (11); *Villages—Gimli.*

**DIVISION No. 13.**—Comprises the municipalities of Dauphin (1), Ethelbert (2), Lawrence (3), Mossy River (4), Ochre River (5), Ste. Rose (6); *Unorganized parts north of township 20 and lying between the eastern boundaries of the municipalities of Ste. Rose and Lawrence, and Lake Manitoba (7); Towns—Dauphin; Villages—Winnipegosis.*

**DIVISION No. 14.**—Comprises the municipalities of Bonito (1), Gilbert Plains (2), Grandview (3), Hillsburg (4), Roseburn (5), Russell (6), Shellmouth (7), Shell River (8), Silver Creek (9); *Unorganized territory between townships 18 and 23 and between ranges 16 and 26 West principal Meridian (10); Towns—Grandview, Russell; Villages—Bisnarth, Gilbert Plains, Roblin, Roseburn.*

**DIVISION No. 15.**—Comprises the municipalities of Minitonas (1), Swan River (2); *Unorganized parts between townships 27 and 35 and between the western provincial boundary and range 23 west principal meridian (3); Towns—Swan River.*

**DIVISION No. 16.**—Comprises unorganized northern parts; *Towns—The Pas.*

## SASKATCHEWAN

**DIVISION No. 1.**—Comprises the municipalities of Argyle (1), Mount Pleasant (2), Finkskillen (3), Cuddeback (4), Estevan (5), Storhoken (6), Reciprocity (32), Moose Creek (33), Browning (34), Benson (35), Antler (61), Moose Mountain (63), Brock (64), Tecumseh (65), Mayfield (91), Walpole (92), Wawton (93), Hazelwood (94), Golden West (95); *Towns—Alameda, Arcola, Carlyle, Carleton Place, Estevan, Oxbow; Villages—Antler, Balfour, Carleton Place, Fairlight, Forget, Frohisher, Gainsboro, Glen Ewen, Heward, Kennedy, Kiskey, Langman, Manor, Mayfield, North River, Redvers, Roche Perce, Stoughton, Wauchuca, Wawota.*

**DIVISION No. 2.**—Comprises the municipalities of Canby (6), Souris Valley (7), Lake Alma (8), Surprise Valley (9), Happy Valley (10), Cypress (36), Lomond (37), Laurier (38), The Gap (39), Bengough (40), Griffin (66), Weyburn (67), Brokenhead (68), Norton (69), Key West (70), Villeneuve (96), Wellington (97), Scott (98), Caledonia (99), Elmhurst (100); *Cities—Weyburn; Towns—Milestone, Ogema, Radville, Yellow Grass; Villages—Amulet, Avenala, Bengough, Brimfield, Caylon, Colgate, Creelman, Fillmore, Forward, Goodwater, Griffin, Halbride, Horizon, Khosive, Lang, Macoun, McTaggart, Midale, Osage, Pangman, Tribune, Trux, Tyvan.*

**DIVISION No. 3.**—Comprises the municipalities of Hart Butte (11), Poplar Valley (12), Willow Lake (42), Waverley (43), Manokta (45), Glen McPherson (46), Exel (71), Bunch of the Rivers (72), Stonehenge (73), Wood River (74), Pinto Creek (75), Auvergne (76), Terrell (101), Lake Johnston (102), Sutton (103), Gravelbourg (104), Glen Bain (105), Whiskey Creek (106); *Unorganized Territorial Units 12, 14, 15, 16, 43; Towns—Assiniboia, Gravelbourg; Villages—Aerodill, Ardill, Cosgrove, Ettington, Expanse, Hazenore, Kinead, Ladbeck, Limerick, Mazenod, Meyrone, Mitchellton, Mossbank, Neville, Palmer, Posteik, Readlyn, Spring Valley, Vanguard, Vantage, Verwood, Viceroy, Woodrow.*

**DIVISION No. 4.**—Comprises the municipalities of Lone Tree (18), Frontier (19), White Valley (49), Reno (51), Wise Creek (77), Grassy Creek (78), Arlington (79), Lac Pelletier (107), Bone Creek (108), Carmichael (109), Pisapot (110), Maple Creek (111); *Unorganized Territorial Units 17, 20, 21, 22, 47, 48, 50, 52, 50, 81, 82, 112; Towns—East End, Maple Creek, Shaunavon; Villages—Admiral, Cadillac, Carmichael, Consul, Dollard, Hutton, Pisapot, Robsart, Scottsgard, Vitoria.*

**DIVISION No. 5.**—Comprises the municipalities of Moosomin (121), Martin (122), Silverwood (123), Kingsley (124), Chester (125), Rocaville (131), Spy Hill (132), Willowdale (133), Elcapo (134), Wolsley (135), Langenburg (137), Fertilite Belt (138), Grayson (139), McLeod (140), Churchbridge (211), Salteaux (213), Cana (214), Stanley (215); *Towns—Bredbury, Broadview, Fleming, Grenfell, Lemberg, Melville, Moosomin, Salteaux, Wapella, Whitewood, Wolsley; Villages—Atwater, Bangor, Birmingham, Churchbridge, Dulse, Duff, Esterhazy, Fenwood, Glenora, Goodeve, Grayson, Killy, Kipling, Langenburg, MacNutt, Neudorf, Otton, Rocaville, Spy Hill, Stockholm, Summerberry, Tantalum, Waldron, Welwyn, Windhorst.*

**DIVISION No. 6.**—Comprises the municipalities of Montmartre (126), Francis (127), Lajord (128), Bratt's Lake (129), Redburn (130), Indian Head (156), South Qu'Appelle (157), Edenwood (158), Sherwood (159), Pense (160), Abernethy (166), North Qu'Appelle (187), Lumsden (189), Dufferin (190), Tallymott (191), Lipton (217), Cupar (181), Longhoughton (219), Sarnia (220), Sarnia (221), Cities—Regina; Towns—Baldwin, Francis, Indian Head, Lumsden, Qu'Appelle, Routham, Sinitahua, Strathburg; Villages—Abernethy, Balaras, Belle Plaine, Bethune, Briereest, Erby-Say, Bulaya, Chamberlain, Craven, Cupar, Dilke, Disley, Drinkwater, Dysart, Earl Grey, Edenwood, Finslender, Fort Qu'Appelle, Grand Coulee, Holford, Kendal, Kronau, Lebelt, Lipton, Markinch, McLean, Montmartre, North Regina, Oleson, Pense, Penseau, Pilot Butte, Regina Beach, Sedley, Sifton, Soutby, Vank, Wilcox.

**DIVISION No. 7.**—Comprises the municipalities of Baildon (131), Hillsborough (132), Rodgers (133), Shamrock (134), Lawtonia (135), Coulee (136), Moose Jaw (161), Caron (162), Wheatlands (163), Chaplin (164), Moose (165), Excelsior (166), Marquis (181), Eyebrow (180), Enfield (194), Vermilion Hills (195), Carik (222), Huron (223), Maple Bush (224), Canaan (225), Victory (226), Coteau (255), King George (256); *Cities—Moose Jaw; Towns—Caron, Carik, Erbert, Moose, Morthach; Villages—Aylesbury, Birsay, Bridgeford, Brownlee, Central Butte, Chaplin, Dumbane, Ernfold, Eyebrow, Hodgenville, Keeler, Lawson, Lucko, Lake, Marquis, Mawer, Parkberg, Riverhurst, Rush Lake, Tuganok, Turley, Waldeck.*

**DIVISION No. 8.**—Comprises the municipalities of Swift Current (127), Webb (138), Gull Lake (139), Big Stick (141), Bitter Lake (142), Saskatchewan Landing (167), Riverside (168), Pittville (169), Fox Valley (171), Enterprise (172), Lucadana (228), Mry Creek (229), Cinnworth (230), Haplyland (231), Deer Forks (232), Mont (257), Fairview (258), Snipe Lake (259), Newcombe (260), Grand Canadian (261), Mantario (282); *Unorganized Territorial Units 146, 170, 227; Cities—Swift Current; Towns—Calder, Gull Lake, Lumsden, Houghton, Laver, Lomsford, Pennant, Pilot, Portreeve, Estary, Riches, Seepre, Shackleton, Success, Tompkins, Webb.*

**DIVISION No. 9.**—Comprises the municipalities of Calder (241), Wallace (243), Orkney (244), Garry (245), Coe (271), Shiloh Hills (273), Good Lake (274), Insinger (275), St. Phillips (301), Keyes (303), Rudman (304), Invermay (305), Livingston (331), Chapton (332), Creeville (334), Hazel Dell (335); *Towns—Canora, Kamscak, Yorkton; Villages—Arnsa, Buchanan, Cadell, Hays, Insigner, Invermay, Norquay, Pelletier, Preceville, Rama, Rhein, Shelo, Springside, Stenen, Stornaway, Sturgis, Theodore, Togo, Veregin, Willowbrook, Wroxton.*

**DIVISION No. 10.**—Comprises the municipalities of Ituna Bon Accord (240), Kellross (247), Touchwood (248), Millington (249), Beaver (276), Emerald (277), Katuna (278), Mount Hope (279), Foam Lake (306), Elfron (307), Big Quill (308), Prairie Rose (309), Sasman (330), Lakeview (337), Lakeview (338), Ayer (339); *Towns—Wadena, Watson, Wynyard; Villages—Dufloe, Elfron, Foam Lake, Hubbard, Ituna, Jansen, Jasmin, Kandahar, Kellross, Kuski, Leross, Lusk, Lestock, Margo, Punnichy, Quill Lake, Quinton, Raymore, Semans, Tate.*

**DIVISION No. 11.**—Comprises the municipalities of East Mountain Valley (250), Big Arm (251), Arm River (252), Wilner (253), Loreburn (254), Wreod (280), Wood Creek (281), McCreary (282), Rosedale (283), Rudy (284), Ushorne (301), Morris (312), Lost River (313), Dundurn (314), Wolvener (340), Vascant (341), Colonsay (342), Blucher (343), Cory (344); *Cities*—Saskatoon, *Towns*—Davidson, Gowan, Hadley, Langton, Nakomni, Outlook, Sutherland, Watrous, *Villages*—Allan, Bladwell, Bradwell, Broderick, Chavet, Colonsay, Drake, Dundurn, David, Elbow, Elstow, Grivin, Glenside, Guernsey, Hawarden, Imperial, Kemston, Liberty, Lockwood, Loreburn, Meacham, Simpson, Strongsfield, Venn, Viscout, Vynn, Zelina.

**DIVISION No. 12.**—Comprises the municipalities of Fortville (285), Mildon (286), St. Andrews (287), Pleasant Valley (288), Montrose (315), Harris (316), Mariott (317), Mountain View (318), Loganton (345), Perdus (346), Hagar (347), Bushville (348), Park (375), Eagle Creek (376), Glenside (377), Rosemount (378), Prairie (380), Battle River (381), *Towns*—Asquith, Hatfield, Hiram, Hildesheim, Roseton, Zeeland, *Villages*—Ardath, Ardath, Bonty, Conquest, Delmas, Dinmore, Harris, Herschel, Kinley, Lane, Loney, Macarrie, McGee, Milner, Perdue, Sovereign, Springwater, Stramner, Swaney, Tessier, Vanclose, Wiscot.

**DIVISION No. 13.**—Comprises the municipalities of Hillsbragg (289), Kinderley (290), Elina (291), Milton (292), Windsor (319), Oakdale (320), Prairieville (321), Antelope Park (322), Grandview (349), Marijosa (350), Progress (351), Heart's Hill (352), Redford (379), Transpang Lake (380), Grass Lake (281), Eye Hill (382), Balfour (389), Rosam Valley (410), Senlac (411), Cut Knife (420), Hillsdale (440), Manitow Lake (442), *Towns*—Uskara, Kerbert, Kinderley, Macklin, Peot, Utley, Wilkie; *Villages*—Adams, Brock, Cavell, Cut Knife, Denzil, Doddsland, Drui, Evesham, Flavemore, Handel, Kelfield, Landis, Leppig, Lousens, Luseland, Major, Marcano, Netherhill, Plenty, Rock Haven, Salvador, Senlac, Stuley, Tramping Lake.

**DIVISION No. 14.**—Comprises the municipalities of Kelvington (366), Ponass Lake (367), Spalding (368), Barrier Valley (369), Pleasantdale (398), Bjorkdale (426), Tisdale (427), Star City (428), Arbofield (456), Connaught (457), Willow Creek (458), Moose Range (484), Nipawin (487); *Unorganized Territorial Units* 361, 363, 364, 365, 394, 393, 394, 395, 396, 421, 423, 424, 425, 431, 433, 454, 455, 481, 483, 484, 485, 481, 513, 514, 515, 516, 517, 518; *Towns*—Melfort, Tisdale; *Villages*—Hudson Bay Jet., Nadeam, Star City.

**DIVISION No. 15.**—Comprises the municipalities of St. Peter (369), Humboldt (370), Bayne (371), Grant (372), Alexander (373), Varmar (374), Lake Lenore (390), Three Lakes (400), Hooedo (401), Fish Creek (402), Rosethorn (403), Laird (404), Carrot River (429), Invergon (430), St. Louis (431), Weldon (450), Birch Hills (460), Prince Albert (461), Duck Lake (463), Russin (469), Buckland (491); *Unorganized Territorial Units* 489, 519, 520, 521; *Cities*—Prince Albert; *Towns*—Duck Lake, Humboldt, Rosethorn, Weldon; *Villages*—Aberdeen, Beatty, Birch Hills, Bruno, Cutworth, Dalmeny, Dana, Donnelly, Englefeld, Hager, Heblum, Howell, Kristiano, Laird, Lake Lenore, Meunster, Osler, St. Brieux, St. Gregor, Wakaw, Waldheim, Warman, Weldon.

**DIVISION No. 16.**—Comprises the municipalities of Great Bend (405), Mayfield (406), Blaine Lake (434), Redberry (453), Douglas (466), North Battleford (437), Leusk (464), Royal (465), Meeting Lake (466), Round Hill (467), Shellbrook (483), Canwood (494), Shell River (495), Medstead (497); *Unorganized Territorial Units* 496, 529, 534, 525, 526, 527, 531, 554, 555, 556, 557, 558, 559; *Cities*—North Battleford; *Towns*—Radisson; *Villages*—Blaine Lake, Borles, Canwood, Dosholm, Fitching, Hafford, Kroyok, Leusk, Marelin, Maymont, Parkside, Richard, Ruddell, Sheldrick, Speers.

**DIVISION No. 17.**—Comprises the municipalities of Meota (468), Turtle River (469), Payton (470), Eldon (471), Wilton (472), Parkdale (498), Merwin (499), Paradise Hill (501), Britannia (502), Greenfield (529), North Star (531); *Unorganized Territorial Units* 528, 532, 558, 559, 561, 562, 588, 589, 591, 592; *Towns*—Lloydminster (part); *Villages*—Edam, Lashburn, Maidstone, Marshall, Meota, Merwin, Payton, Turflevon, Vawn, Waseca.

**DIVISION No. 18.**—Comprises northern unorganized parts.

## ALBERTA

**DIVISION No. 1.**—Comprises the municipalities of Flowery Plains (33), Burlington (34), Warner (36), Forty Mile (64), Eureka (65), Excelesior (92), Rose Island (93), *Unorganized Territorial Units* 1, 2, 3, 4, 5, 6, 31, 32, 35, 61, 62, 63, 66, 91, 93; *Cities*—Medicine Hat; *Towns*—Bow Island, Irvine, Taber; *Villages*—Burdett, Grassy Lake, Milk River, Walsh, Warner.

**DIVISION No. 2.**—Comprises the municipalities of Cochrane (10), Sugar City (37), Kerr (39), Castle River (40), Brighams (90), Livingston (70), Anzley (99); *Local Improvement Districts* 7, 8, 9, 38, 67, 68, 71, 100, 101; *Cities*—Lethbridge; *Towns*—Blairmore, Cardston, Claresholm, Coleman, Diamond City, Grauma, Macleod, Magrath, Pincher Creek, Raymond; *Villages*—Coadale, Coalhurst, Commerce, Cowley, Frank, Monarch, Pincher City, Strling.

**DIVISION No. 3.**—Comprises the municipalities of McLean (96), Suncy South (123), King (133), Britannia (183); *Local Improvement Districts* 121, 122, 124, 125, 126, 131, 132, 134, 155, 156, 184, 182, 184, 185, 186, 211; *Towns*—Bassano, Brooks, Redcliff; *Villages*—Alderson, Duchess, Empress, Enchant, Jenner, Retlaw, Sault.

**DIVISION No. 4.**—Comprises the municipalities of Little Bow (98), Clifton (127), Harmony (128), Clear Lake (129), Marquis (152), Royal (153), Riley (159); *Districts* 189, Sheep Creek (190), Stockhead (191); *Local Improvement Districts* 97, 130, 131, 190, 161, 192; *Unorganized parts between townships 17 and 22 west to the provincial boundary: Towns*—Carmangay, High River, Nanton, Okotoks, Stavelly, Vulcan; *Villages*—Barons, Blackie, Cayley, Champion, Lomond, Nobelford.

**DIVISION No. 5.**—Comprises the municipalities of Berry Creek (214), Bulyen (215), Acadia (241), Cereal (242), Collinwood (243), Flowerdale (244), Lochbute (245), Bertawan (271), Golden Centre (272), Sounding Creek (273), Richdale (274), Hand Hills (275), Michiel (277), Camner (301), Stewart (302), Wase (303), Hiran (304), Dowling Lake (305), Lamton (306), Starland (307); *Local Improvement Districts* 212, 213, 246; *Towns*—Drumheller, Hanna, Youngstown; *Villages*—Cereal, Chinook, Craigville, Delia, Morrin, Munson, Oyon, Richdale, Rumsey.

**DIVISION No. 6.**—Comprises the municipalities of Blackfoot (218), Bow Valley (219), Shepard (220), Springbank (221), Grasswood (248), Keema (249), Reddington (250), Carboe (278), Norquay (279), Rosbud (280), Beaver Dam (281), Ghost Pine (308), Stauffer (309), Mountain View (310), Westdale (311); *Local Improvement Districts* 216, 217, 222, 247, 251, 252, 282; *Unorganized parts between townships 21 and 31 west to the provincial boundary: Cities*—Calgary, Banff (not incorporated); *Towns*—Didsbury, Gleichen, Olds, Strathmore; *Villages*—Acme, Aldrie, Beloeur, Carboe, Carstairs, Cochrane, Crossfield, Errisana, Langdon, Rockford, Rosbud, Three Hills, Trochu.

**DIVISION No. 7.**—Comprises the municipalities of Coronation (334), Sullivan Lake (335), Rosemead (361), Hillcrest (362), Stocks (363), Flagstaff (364), Progress (365), Sifton (391), Vase (392), Huamha (393), Asquith (394), Wheatland (395), Ribstone (411), Gird Edge (422), Battle River (423), Kinsella (424), Stirling (425), Iron Creek (453); *Local Improvement Districts* 331, 332, 333; *Towns*—Custer, Coronation, Hardisty, Wainwright; *Villages*—Allison, Cadogan, Chauvin, Conquest, Car, Edgerton, Forestburg, Galahad, Hughenden, Irma, Kilmam, Lougheed, Montrose, Provost, Selkewick, Strone, Veteran, Viking.

**DIVISION No. 8.**—Comprises the municipalities of Success (336), Vimy (337), Hays (338), Pine Lake (339), Arthur (340), Dublin (366), Waverly (367), Haig (396), Lakeside (397), Lamerton (398), Crown (399), Melrose (426), Evergreen (427), Watongen (428), Ferlie Valley (429), Parkland (456), Lloyd George (457), Montgomery (458), Hignstone (459); *Cities*—Red Deer, Wetaskiwin; *Towns*—Big Valley, Coronation, Dugald, Innisfail, Lacombe, Ponoka, Stettler; *Villages*—Alia, Bashaw, Bawli, Batters Lake, Blackfolds, Beba, Clive, Delburne, Donalds, Erskine, Ferintosh, Gadsby, Halkirk, Heisler, Millet, Mirror, New Norway, Oshon, Penhold.

**DIVISION No. 9.**—Comprises the municipalities of Waterloo (312), Poplar Grove (313), Raven (342), Prairie Creek (343), Golden West (371), Leno (400), Lochearn (401), Blindman (430), Last West (431), Colonsay (490); *Local Improvement Districts* 344, 403, 432, 433, 434, 461, 462, 463; *Unorganized Territorial Units* 374, 464; *Unorganized parts between townships 30 and 47 west to the provincial boundary: Villages*—Bentley, Bowden, North Red Deer, Rimby, Rocky Mountain House, Sylvan Lake.

**DIVISION No. 10.**—Comprises the municipalities of Merton (451), Grizzly Bear (452), Buffalo Coulee (453), Lakewood (454), Wellington (481), Vermilion Valley (482), Melberta (483), Birch Lake (484), Patricia (485), Beaver Lake (486), Strathcona (511), Ethelwyn (512), Ukraina (513), Solor (514), Norma (515), The Pines (516), Eagle (543), Westok (546), Leslie (547); *Towns*—Lloydminster (part), Vegreville, Vermilion; *Villages*—Bruderheim, Chipman, Hadden, Innisfree, Islay, Kitscoty, Lamont, Lavo, Mannville, Minnam, Mundare, Ryley.

**DIVISION No. 11.**—Comprises the municipalities of Cornhill (457), Black Mud (488), Liberty (489), Pioneer (490), Clover Bar (517), Strathcona (518), Spruce Grove (519), Inna (520), Tomahawk (521), Sturgeon (541), Ray (549), Woodford (550), Morthen (551); *Local Improvement District* 491; *Cities*—Edmonton; *Towns*—Beaverly, Fort Saskatchewan, Leduc, Morinville, St. Albert, Stony Plain, Tofield; *Villages*—Alberta Beach, Seba Beach, Wabamun.

**DIVISION No. 12.**—Comprises the municipalities of Rocky Rapids (522), Pembina (522), Kitchener (582); *Local Improvement Districts* 483, 496, 523, 525, 526, 527, 533, 551, 555, 556, 557, 558, 583, 584, 585, 588, 611, 615, 616; *Unorganized Territorial Units* 494, 495, 524, 586, 587; *Unorganized parts between townships 46 and 57 west to the provincial boundary: Towns*—Edson; *Villages*—Entwistle.

**DIVISION No. 13.**—Comprises the municipalities of Lincoln (542), Laurier (543), Champlain (544), Boucher (572), St. Vincent (573), St. Lina (574), Vilna (575), Ashmont (605); *Local Improvement Districts* 511, 571, 601, 602, 603, 604, 612, 632, 633, 634, 635, 661, 663, 664, 666, 665; *Unorganized Territorial Unit* 543, Paul de Mets.

**DIVISION No. 14.**—Comprises the municipalities of Smoky Lake (576), Unity (577), Opal (578), Hazelwood (579), Locketree (580), Pershing (581), Tawainaw (608), Pibroch (609), Cartier (637), Nelson (638), Gromont (668); *Local Improvement Districts* 607, 610, 611, 636, 639, 640, 665, 667, 669, 696, 697, 698, 699, 726, 727, 729; *Unorganized Territorial Unit* 728; *Towns*—Athabasca; *Villages*—Clyde, Lac La Biche, Lejac, Westlock.

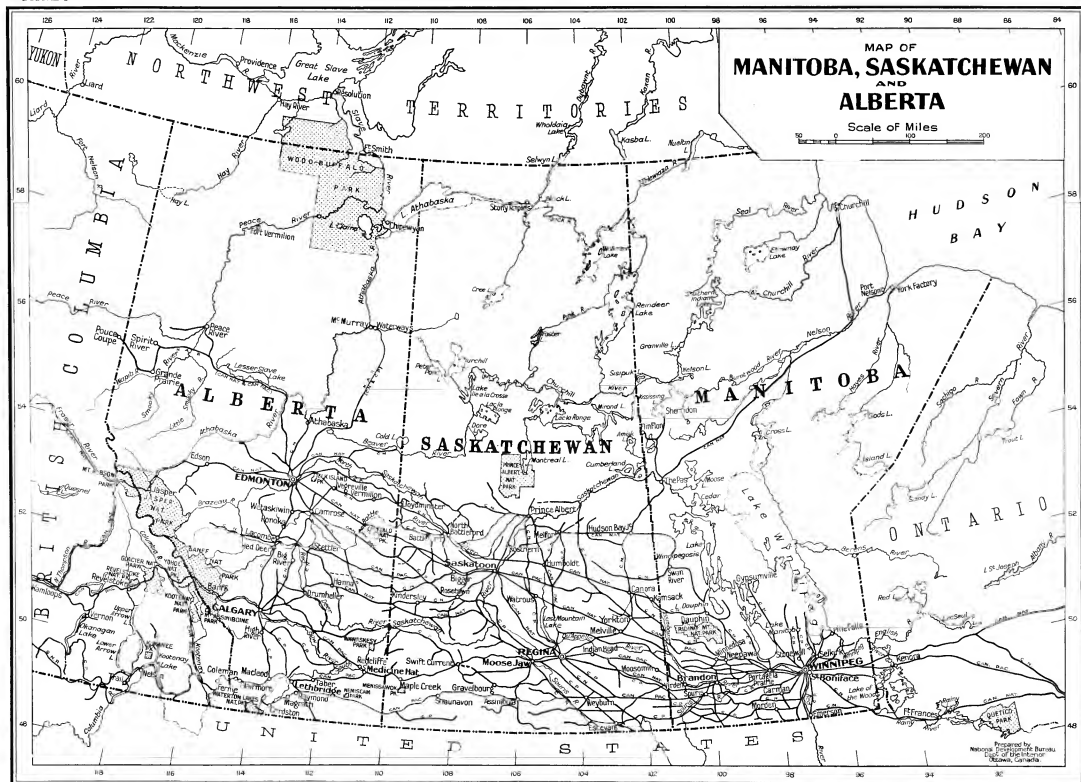
**DIVISION No. 15.**—Comprises Local Improvement Districts 613, 614, 642, 643, 647, 670, 702, 705, 706, 707, 708, 710, 730, 731, 732, 733, 734, 735, 736, 737, 738, 744, 765, 766, 767, 794, 795, 796, 826, 826, 835, 835; *Unorganized Territorial Units* 617, 618, 619, 620, 621, 622, 644, 645, 646, 648, 671, 672, 673, 674, 675, 676, 677, 678, 679, 700, 701, 703, 704, 710, 824; *Unorganized parts between townships 56 and 69 west to the provincial boundary, and the part of T. 69, R. 10 and 11, W. 5th Meridian south of the Wapiti River: Towns*—Grouard, Peace River.

**DIVISION No. 16.**—Comprises the municipalities of Grande Prairie (730), Bear Lake (740), Spirit River (829), Peace (837), Fairview (858); *Local Improvement Districts* 741, 742, 769, 770, 771, 772, 797, 800, 801, 827, 828, 830, 831, 839, 860, 861, 886, 887, 888, 889, 916, 917; *Unorganized Territorial Units* 840, 841, 918, 919; *Unorganized parts between townships 86 and 90 and between U.T. 919 and the western provincial boundary: Towns*—Grande Prairie; *Villages*—Clairmont, Spirit River.

**DIVISION No. 17.**—Comprises the remainder of the province consisting of northern parts.

## POLITICAL MAP

FIGURE 3





## TEMPERATURE

**W**INTER.—Great variations of temperature may be expected to occur every few days. A very mild month may be either preceded or followed by a very cold one. Winters which have been very mild on the whole as well as winters of exceptional severity have occurred in all three provinces.

The two major controls of winter weather in western Canada are (a) the movement of masses of very cold air from the region to the northwest, lying between the Coppermine and the Yukon rivers, and (b) a general westerly circulation which overruns the prairies, accompanied by temperatures well in excess of the normal winter temperature.

It should be understood that the masses of cold air in a moving northwest cold wave do not primarily originate in the region between the Coppermine and the Yukon. Such cold waves are only a phase of the general pulsatory atmospheric movements by which air is exchanged between land and ocean, and between septentrional and tropical regions. The first indication of the advancing front of a cold wave is, however, most generally noted in the region named. During the advance of the cold wave, the temperatures may be lower at the surface in the central interior of northwest Canada than they were at the surface in the region of apparent origin. In very severe winters such cold waves pass frequently from the Mackenzie valley and adjacent territory, across Saskatchewan and Manitoba into eastern Montana and the Dakotas. In such winters westerly waves are feeble, barely becoming of importance in Alberta and western Saskatchewan before they are displaced by fresh northwest waves. Infrequent variants of the cold winter type are months when the northwest cold waves follow more or less faithfully a path south along the mountain or plateau region, bringing severe cold to western Alberta and the interior valleys of British Columbia.

On the other hand in very mild winters the northwest movements are feeble, with cold waves of varying intensity moving far to the northeast across northern Manitoba or northern Ontario, or the only vigorous movements of northern origin may appear to have shifted their locale to the region of Ellesmere and Baffinland. The prairies may then be largely dominated by prevailing westerlies with correspondingly high temperatures.

It naturally follows from these weather controls that Alberta has generally milder winters than the other two provinces, and that in an average winter, when the importance of the two major weather controls is fairly divided between them, notable fluctuations of temperature of either long or short period, may be expected in all three provinces.

Southern Manitoba sometimes falls within the westerly margin of the comparatively mild conditions which usually dominate the eastern interior of the continent.

In exceptionally cold months the temperature may average ten to twenty degrees (*Fahr.*) lower than the normal temperature, while in very mild months large areas may average ten to twenty-five degrees higher than the normal. During intense cold waves 60 to 70 degrees below zero have been recorded at a few northerly points in Alberta and Saskatchewan, at least once during the last forty-five

years. At a great many points within the grain region 50 to 55 degrees below zero has been reached once or often, although at several southern observing stations the lowest point on record lies between 40 and 45 below zero. Over the central portion of the grain region a temperature of 20 to 30 degrees below zero is commonly touched during a severe cold wave, while farther north towards the present limit of general agriculture, as well as in the hilly regions of eastern Saskatchewan, the temperature may fall to 30 or 40 below at least once during an average winter.

An average midwinter day will swing from zero at dawn to 20 above zero at 1 p.m. in southern Alberta, and from 10 below zero to 10 above zero over a great part of the central portion of the spring grain region. On exceptionally mild days the temperature may reach 60 or 75 above zero in Alberta from Edmonton south to the Bow and St. Mary valleys, and in Saskatchewan may reach 50 or 60 above zero in the southwest and 45 to 55 in the southeast. In Manitoba 50 has been reached or exceeded in winter in the extreme south but has not been reached in the western highlands nor in the east close to the Great Lakes of Manitoba. On rare winter days 50 degrees above zero may be exceeded even in the far north of Alberta. Fifty-nine is the highest winter temperature on record at Chipewyan on Lake Athabasca. Generally, however, on mild winter days the temperature does not exceed 25 to 35 degrees above zero in Alberta, and 20 to 30 degrees in Saskatchewan and Manitoba.

**SPRING.**—The astronomical date of the beginning of spring is the day when the sun reaches the first point of Aries, varying with the calendar about one day and falling on or about the 21st of March. The common expressions, "late spring" and "early spring" cannot therefore refer to the astronomical date but rather to spring as defined by distinctive local phenomena. No rigid definition of spring in terms of local phenomena appears to exist. It was therefore necessary to construct a definition upon a statistical basis. Accepting the usual statement that ordinary growth begins at an air temperature of 43 degrees *Fahr.*, we found for every station in the three provinces the first day of the year when the temperature may be expected to touch 43 degrees in the afternoon as the high point of the day. Since this day was found by the method of averages over a long period of years, each successive day after this date will on the average touch a higher point than the preceding day. This first day when the temperature rises on the average to 43 degrees was taken as the first day of spring. The dates will be found differentiated on an accompanying map, by five-day intervals. In many districts the observations were not continuous over more than ten years, but at the principal stations data for twenty to forty-five years were available. The map shows that spring usually begins in southern Alberta during the last week in March, advancing rapidly north in western Alberta east of the foothills. Along the international boundary towards the east, the advance is slower but in much of southern Saskatchewan and in extreme southern Manitoba spring usually begins during the first week of April. In east-central Alberta and the more northern portion of the cultivated regions of Saskatchewan and Manitoba, spring is delayed until the second week of April. The present limits of general agriculture approximately coincide with a line which might have been drawn upon the map to represent the date April 14. Northwestward spring advances very slowly till at Churchill on the western shore of Hudson Bay, it arrives on the average on the 25th of May.

The temperature of the spring months is subject to very great variations, both from week to week, as well as from one year to the next. It may climb to 80 or 90 degrees in April or May while belated cold waves have in some years brought the temperature in April down to 5 degrees below zero in Alberta and to 10 below in central Saskatchewan and southern Manitoba. After the passage of these cold waves the temperature generally rises with remarkable rapidity in Alberta and southwestern Saskatchewan but recovery is frequently rather slow in eastern Saskatchewan and Manitoba. Rarely do the cold waves have great severity in May, but there are instances on record during the last forty-five years when a temperature of 10 degrees above zero, or lower, has occurred during the first week of May. An average April day will rise from 25 degrees at sunrise to 50 or 55 degrees in the early afternoon, while an average May day will have a range of temperature from 35 or 40 at dawn to 60 or 65 between one and two o'clock p.m.

Frosts in early May are of common occurrence but towards the end of May when the territory to the west of Hudson Bay has reached spring temperatures, killing frosts are usually ended in the cultivated regions. Persistence of cold waves drifting east across the middle north in some years has the effect of delaying the disappearance of the last frost. Cold air seems to follow the lines of hills which extend northward beyond the present limits of agriculture into the frosty north. On the map which indicates the relative persistence of spring frosts, one can trace three fairly distinct thrusts of frosty influence into the plains. One is directed outward from the Rocky mountains into western Alberta; a second is directed south from the divide between the Churchill and Athabasca basins, leaving the headwaters of the Beaver and affecting the hilly territory of the creeks flowing north into the North Saskatchewan river in eastern Alberta and northwestern Saskatchewan; a third follows the line of hills in eastern Saskatchewan and western Manitoba, the Pasquin hills, Duck and Riding mountains. In addition to these frosty regions of the lower Churchill and lower Nelson rivers has extensions south into far eastern Manitoba and western Ontario. In these hilly regions the last killing frost (as indicated by a minimum of 29 degrees *Fahr.*) occurs on the 30th of May on the average. On the plains in southern districts killing frosts are usually over about the 15th of May, with some districts immediately along the course of the St. Mary and Bow rivers escaping serious frost in most years after the 7th of May. In the foothills of western Alberta frosts may occur in June and in some of the higher valleys at least light frosts have been recorded in every month of the year.

**SUMMER.**—According to popular usage, summer comprises the months of June, July and August. In western Canada, however, the climate varies quite considerably during these months according to locality. As in the case of spring, no criterion exists by which we may determine the advent of summer. To put the season's beginning and ending upon a statistical basis, we can not avoid a very arbitrary choice of definition. We may note, however, that within the present limits of the spring wheat area, a mean daily maximum of 70 degrees appears to be related to the maturity of the wheat crop. Beyond the region where the mean daily maximum temperature of July approximately equals or exceeds 70 degrees, wheat is planted without certainty of maturity but with the intention of using it for fodder in immature condition should the season not be favourably warm. Early frosts do,

of course, play a very important role in fixing the northern and the western limits of wheat culture, but one accustomed to the tabulation of weather data in these provinces, can see that the districts with the hottest days in July, are also in general the districts least likely to suffer from early frosts before wheat is mature. Wheat also matures more rapidly in the districts with the warmest summers under the normal conditions of soil moisture. It seems, therefore, that although a criterion of a mean daily maximum of 70 degrees or higher is a very arbitrary measure of the duration of summer, it has considerable merit as applied to the Canadian West. The reasons are (a) it will carry the summer season beyond the period of late frosts in May or early June, (b) it will give some indication of the relative dependability of wheat reaching maturity.

Taking the first day of the year when on the average the temperature reaches 70 as the high point of the day, as the beginning of summer, we find that on the average summer begins on the 20th of May at Medicine Hat. It begins on the 7th of June at Lethbridge, at Brooks on the 8th, at Raymond on the 11th, at Macleod and Cardston on the 14th. These points are all in southern Alberta and the date varies in a general way with distance from the mountains and with distance north. In the more northerly regions and closer to the foothills, summer comes later on the average. Summer's advent occurs on the 20th of June at Calgary, at Canmore and Wetaskiwin on the 16th, at Edmonton on the 12th, at Lloydminster on the 17th. Further north than Edmonton, there are, admittedly, difficulties in applying this simple criterion because here points which have the same day temperature vary greatly in their night temperatures. In a general way, however, we may say that in the southern Grande Prairie region summer is delayed till the 25th of June or later, while along the Athabasca river, far from the hills, as at McMurray, the average date is the 15th of June.

In Saskatchewan, in the most southerly districts, the average date varies with locality from the 1st to the 7th of June, except in the hilly regions, the Cypress hills, part of the Wood Mountain and Moose Mountain regions. Further north in Saskatchewan the date is later. At Saskatoon summer begins on the average about the 11th of June, at Prince Albert on the 12th, at Battleford on the 13th, but generally at points quite near to Battleford on the 15th or 16th. In the hilly region of eastern Saskatchewan there is considerable local variation. The average dates are the 10th of June at Yorkton, the 17th at Kamsack, 24th at Hurlburt, and the 20th at Lestock and Melfort. In the region north and west of Prince Albert as far as the Beaver river, the average date varies from the 17th to the 28th of June.

Summer ends on the average when the mean daily maximum no longer rises as high as 70 each day. Over the greater part of central Alberta, outside the foothills, this date is approximately the 15th of August. At Medicine Hat, the southeast summer ends on the 12th of September, at Lethbridge on the 5th of September, but at Calgary on the 17th of August, at Edmonton on the 20th of August, in the Peace River country from the 13th to the 17th of August.

In Saskatchewan the date varies from about the 10th of September at some southern points, to about the 20th of August at Prince Albert. A large portion of the region most intensively sown to wheat, comes to the end of summer on the 29th of August in an average year.

In Manitoba summer ends on the average about the 12th of September in some districts of the extreme south, but more generally in the southern districts the average date is the 7th of September. The corresponding dates in the Dauphin district and in the hilly country of the upper Assiniboine valleys vary with locality. At Lake Dauphin summer ends on the 1st of September, but a week earlier at some other points in the hills immediately to the east. North of the Great lakes of Manitoba, we find the date at Norway House is August 14th, and at The Pas, August 18th.

The area at present devoted to agriculture in Saskatchewan and Manitoba, is in the southern half of these provinces. In Alberta, also, a large territory lies north of the generally cultivated area. In these northern districts, summer, by our criterion of a mean daily maximum of 70 degrees, is quite short. In fact at Nelson, Churchill and all along the Manitoba coast of Hudson bay, there is no period, in an average year, when several days reaching 70 degrees or higher, can be expected to occur in succession. Great heat does occur in the north, however. On unusual days in some years, temperatures exceeding 90 or 95 degrees may occur as far north as the delta of the Mackenzie river, almost upon the shores of the Arctic ocean. Such short heat waves tend to travel to the northwest, following the Mackenzie valley, but tending to avoid Hudson bay, they appear to be unknown north of Churchill and east of lake Athabasca. On the shores of lake Athabasca summer is shorter than in the region immediately north and west of the lake. At Fort Smith on the northern boundary of Alberta, summer begins in an average year on the 27th of June and ends on the 5th of August, about forty days in all. At Fort Vermilion, on the Peace river, summer ends on the 17th of August after approximately sixty days. At Chipewyan on lake Athabasca only a few successive days of warmth may be expected in mid-July, although occasional hot days, when 80 or even 90 degrees have been reached, are on record during the last three or four decades. The northeastern corner of Saskatchewan from Fond du Lac to Reindeer lake also has a very short summer, and in the extreme north of Manitoba summer vanishes by our criterion.

Far down the Mackenzie valley, on the other hand, we may expect fifteen to twenty-free days of summer. The northern regions of Alberta, therefore, more nearly resemble, in climate, the present cultivated area, than do the northern regions of Saskatchewan and Manitoba. It is a characteristic feature of the climate of the North American continent that the temperature of the northeastern portion of the continent remains very cool in mid-July, while the northwestern portion experiences warm weather sufficiently often to average considerably higher.

An average midsummer day over the agricultural regions of Saskatchewan and Manitoba will rise from a minimum of 50 degrees at sunrise to 75 degrees in the afternoon, except in the most southerly districts where 80 will be reached on the average. At the northern limits of Alberta and Saskatchewan 70 degrees may be expected. In northern Manitoba an average July day rises at Nelson from 45 to 66, and at Churchill from 42 to 65. Killing frosts may occur in July in this northeastern portion of Manitoba. In the hottest part of southern Alberta, of which Medicine Hat is typical, a midsummer day may be expected to rise from 55 to 85. Westward, towards the mountains, the temperatures vary considerably with both elevation and latitude. In the Edmonton region, 50 to 70 is the average range of a day towards the end of July, but in the foothills the morning minimum generally

falls below 45, and light frosts may occur in July. Very high temperatures may occur at times in the southern prairie region, and less frequently in the so-called "park belt." Temperatures of 100 or higher are not at all uncommon from Medicine Hat eastward along the international boundary. 110 degrees at Manor, Saskatchewan, and at Dauphin, Manitoba, constitute the extreme high records in the south, while 105 at McMurray in northern Alberta is the highest temperature known in the north.

FALL.—The beginning of fall in various districts has been noted in the previous paragraph as the average date of the ending of summer. The advance of the fall season is noted first in the northern districts and in the mountainous region of Alberta. Over the region devoted at present to agriculture the variation in the average date of the beginning of fall is from the 15th of August in the Peace River country to the 12th of September in the most southerly regions of eastern Alberta and southern Manitoba.

We need also an arbitrary statistical definition of the end of fall. We have taken the first day when a minimum temperature of 43 degrees may be expected (and therefore some growth) as the beginning of spring. Consistently, therefore, we take the last day when a minimum of 43 may be expected as marking the average date of the end of all growth, and therefore the beginning of winter or the end of fall. Fall ends on the average, by this criterion, about the 22nd of October in the Peace River country, about the 30th of October in central Alberta and about the first week in November in southeastern Alberta. In Saskatchewan the date ranges from the 20th of October north of Prince Albert to the 1st of November south of Moose Jaw. In Manitoba fall ends between the 25th of October and the 1st of November in most of the region devoted to agriculture.

During the fall occasional cold days may be expected and light falls of snow occur. The average total fall of snow during this period is about five or six inches but in very unusual autumn seasons as much as 15 or even 20 inches of snow have fallen. In the average autumn the snow soon melts, although it may seriously interfere with threshing of grain for a few days and lower the quality of wheat. The total precipitation (rain and melted snow) usually amounts to from one and one half to two inches during this season. Rarely, there is a wet fall season when the precipitation may total from four to seven inches over the grain belt. One of the curious features of the climate is the apparent decrease in precipitation during October to be followed in November by a slight but noticeable increase. Nearly all the records taken since 1881 show this peculiarity when averaged for the whole period. During the period from 1875 to 1881 the records taken in Manitoba, on the contrary, show more precipitation in October than in November. Very fine and even hot weather may occur during this season, although the hot spells are usually of very short duration. Temperatures of 85 degrees have been recorded in October in Saskatchewan and Manitoba and exceeding 90 in southern Alberta. There may be a total variation of about 12 degrees in the temperature of an autumn month. That is to say, there have been Septembers 6 degrees warmer than a normal September and also Septembers 6 degrees colder than a normal September. The same is true of Octobers.

An average day in mid-autumn will rise from 30 to 35 degrees in the early morning to 50 or 55 degrees in the afternoon. An extraordinarily early cold wave may bring the temperature down to zero or nearly zero. The early onset of winter in the northern half of Manitoba compared with the slower advance in northern and especially northwestern Alberta is worthy of note.

## PRECIPITATION

In southeastern Alberta, a large part of western Saskatchewan, and generally in the northern regions of all three provinces, the annual precipitation averages less than 15 inches. In a portion of southeastern Alberta and of southwestern Saskatchewan, where the winters are fairly mild, where spring comes early, fall late, and the heat of summer is often intense, the average annual amount is between ten and twelve inches. In eastern Saskatchewan, from the Touchwood hills southeasterly to Moose Mountain creek, and generally throughout southern Manitoba, the annual amount exceeds 15 inches, while in a portion of the Red River valley in Manitoba, it exceeds 20 inches. In a narrow strip close to the Rocky mountains in southwestern Alberta, in the upper valleys of the Red Deer river and its western tributaries, as well as in a large portion of the basin of the North Saskatchewan river in Alberta, and in the basin of the Athabasca river, 15 inches is also generally exceeded. In the extreme southwestern portion of Alberta, the annual amount averages 20 to 30 inches.

Compared with the average annual amount in, say, southern Ontario of 30 to 40 inches, the western precipitation seems that of a semi-arid country. An important feature of the climate, however, is that the bulk of the precipitation occurs as rain in summer, the maximum proportion occurring in June and July in the present wheat areas. In a year with favourable rains in summer, provided there was enough moisture in the spring to germinate grain and to supply the very small initial requirements of the young plants, very large yields of grain are obtained and grazing is profitable. The rainfall is very variable from year to year in the West, however, and, except in the irrigated areas, failure of the summer rains is a very serious matter to the grain farmer and grazier.

Generally about 5 per cent of the annual amount falls in April, 12 per cent in May, 15 to 20 per cent in June, the same in July, and 10 to 15 per cent in August. About 60 to 70 per cent falls from April 1 to August 31 and approximately one-half of the annual amount in June, July and August. There is considerable local variation in the monthly proportions, but those stations where the longest records are available indicate that there is a tendency in the long run for the maximum raininess of the year to be reached in the period May 15 to June 15 in the extreme southwest corner of Alberta; from June 1 to June 15 in southern Alberta and southwestern Saskatchewan; from June 15 to July 1 in the central portion of the grain belt; and from July 1 to July 15 along the northern margin of the grain belt. Beyond the present region of general agriculture, the peak of the rainy season comes later. In the Mackenzie Valley and at Churchill, on the west coast of Hudson bay, August and September average wetter than the other months of the year. This northward advance of the rain-peak is,

however, recognizable only in averages, and is of no value for purposes of forecast.

The occurrence of rain in appreciable amounts in the Prairie Provinces is dependent upon the advance southward of relatively cool air-masses from the northeast and northwest. The advance must occur in such a way that while warm air-masses carrying water-vapour from the south are invading the grain belt, they are surrounded in their further advance by an environment of relatively cool dry air of septentrional origin. In this environment the vapour-bearing air-masses ascend, expand and cool to such a temperature that they are no longer able to retain all their moisture. The excess is then precipitated, as cloud, fog, or rain. A nice balance between the moments of the southern and northern air-masses must exist if rain of a moderate or heavy quantity is to fall. Too rapid an advance of cool air from the northeast across Manitoba, cuts off the supply of moisture-bearing air coming from the south, so that rain fails to occur in western Manitoba, or Saskatchewan, although heavy rain may occur in the western United States on the margin of this cool, northeast polar front. Failure of the cool air-masses to advance from the northwest allows warm air to sweep north over the grain-belt. During these hot spells the amount of moisture carried in the air is often enormous but since there is no interference with the northward movement no precipitation occurs, and very often very little cloud forms. The combination of strong sunshine and great heat in these rainless spells rapidly depletes the soil moisture.

In southern Alberta and southwestern Saskatchewan, in summer, air-masses of southwesterly origin, which have very low water-content but are very warm, often issue from the plateau region, farther south. If such a circulation is not quickly displaced by the southward advance of a cool wave, scorching of the standing grain occurs.

In the foothills in Alberta, and also in the Peace River country and the adjacent region from Lesser Slave lake to Edmonton, good rains may occur while the central regions suffer from drought. This appears to be due principally to two reasons. Warm moisture-bearing air which has passed over the central regions may meet a cool environment in the northern latitudes or in the higher elevations of the foothills, although this cool environment lacks sufficient energy to advance further south. At times also moisture-bearing air invades this territory from the northern Pacific ocean and rises with dynamic cooling over a very limited area.

In the hilly regions of eastern Saskatchewan and the so-called "park belt," scattered thunderstorms will occur due to local extensions of tongues of cool air through the hills, when the conditions for rain are not sufficiently advanced for general rains over the prairies.

Great variations in rainfall may occur from year to year in this region, corresponding to those variations in the general atmospheric circulation of the Northern Hemisphere which affect the mechanism of rain as briefly indicated above. Failure of rains in a warm spring is greatly accentuated if little moisture was frozen into the top-soil in the previous fall. Light soils, particularly in the southern districts of Saskatchewan, may dry so quickly in such a spring that extensive damage may be done by winds in drifting the soil or "blowing out"

the seedlings. In a wet spring the value of the rains in the previous fall can not be detected. With the advance of the hot season (owards the end of May usually) the need for rain in this semi-arid region becomes very great. If the June rains are delayed, the young grain exists only on the supply of moisture in the top-soil, and the rainfall of the previous season, as well as that of spring, becomes very important. If, however, June is cool and rainy from the outset, grain grows rapidly and promises a good yield in spite of earlier deficiencies, unless they were very severe.

Frequent moderate rains in June, with only short spells of heat, produce much greater benefit than heavy rains with long heat spells intervening. A hot July with scanty rainfall is injurious to the grain, but the damage is greatly accentuated if heat and drought follow a June with infrequent rains. Rainfall in August increases the yield of the grain but, if heavy, appears to increase the starchy content. Interesting comment on the nitrogen content of wheat, in relation to rainfall and sunshine, will be found in papers by Dr. F. T. Shutt, the Dominion Chemist, Department of Agriculture, Ottawa.

## CLIMATOLOGICAL INDEX OF ARIDITY

The very great variability in the extent and quantity of summer rainfall, and the frequent occurrence of great heat during dry spells, constitute the major problems of agriculture in the Prairie Provinces. The yields of grain and the health of pastures are most largely dependent upon comparatively cool weather and sufficient rain in June and July.

Depletion of soil moisture and injury to crops and pastures vary directly with excessive heat and inversely with the rainfall. To give a graphic representation of the average variation of this combination of factors over the Prairie Provinces, resort was had to the following scheme. The average mean daily highest temperature in June and July over a period of years at all recording points was divided by the average rainfall for the same period. The resulting quotients were entered upon a map at their proper points. The average value of the quotient for the present grain belt was then determined by graphical integration. The percentage-proportion which every point-quotient bore to the general average was then determined and entered again upon a map. The final map will be found on page 21. The regions where the tendency to aridity is greater than the normal, are distinguished from the regions where summer conditions average better by the shading.

The map is differentiated by lines indicating equal increments or decrements of 10 per cent of the mean value in the area generally cultivated at the present time. The lines have, therefore, no absolute meaning but indicate only relativity. The line passing through points exceeding the average point-quotient by 40 per cent is, however, easily recognized as the approximate boundary of the region widely known as the "dry belt." This area begins in southwestern Saskatchewan and southeastern Alberta in that part of the Milk River basin lying south and west of the Cypress hills. Including a portion of the Etanikon and Chin Cowles region as well as lake Pakowik, it extends north of the Bow river. Here the "dry belt" covers most of a triangular area

lying between the Bow, the South Saskatchewan and the lower Red Deer rivers and extends into Saskatchewan again beyond the confluence of the Red Deer and the South Saskatchewan rivers. The lines of 40 and 50 per cent increment of average aridity are thus tied to a generally known feature of the West. With the +40 per cent line as a datum level, we can judge that the +30 line includes a further region where the tendency to droughty conditions is nearly as great. This line takes us west nearly to Lethbridge, to Bassano on the northwest, to the edge of the Sounding Creek region on the north, and along a narrow tongue, northeast almost to Saskatoon. From Outlook, the boundary runs southwest through Saskatchewan back to Medicine Hat in Alberta. A much smaller area lies south of Weyburn and west from Estevan in southeastern Saskatchewan, while the most westerly portion of the Grande Prairie region in far northwestern Alberta is also relatively arid.

The greater part of southern Manitoba, the eastern and northern portions of the cultivated area in Saskatchewan and a very large area in Alberta, principally in the north, are much less subject to arid summers. The regions of which Edmonton and Calgary are the approximate centres are the least subject to droughts but the Edmonton region is very much larger in extent. From Swift Current to Wood Mountain and in the Cypress hills there are areas a very little better than the average. Southwestern Manitoba on the other hand is somewhat poorer than an average region.

#### CLIMATOLOGICAL INDEX OF COMPARATIVE FERTILITY

A considerable portion of the region with comparatively low aridity is not well suited for the cultivation of spring wheat on account of the danger of late or early frost or both. The beginning, as well as the end, of the season has been in many years subject to very cool nights, which tend to lengthen the season required for maturity beyond the number of days which the same variety of wheat requires in a warmer region. In the comparatively arid region, on the other hand, wheat is generally favoured with weather at the beginning and end of the season which assures a steady rate of growth. Maturity without much danger of damage from frost, and generally better quality of the kernels, are characteristic of the more arid areas.

The simplest method of taking into account this additional factor is to weight each of the point-quotients in our original map of temperature and rainfall by the average length of the season free from killing frosts at each point. After graphical integration over the cultivated area, the average value of all the weighted point-quotients was known. The proportion which each weighted point-quotient bore to the general average was entered upon a map. The resulting map on page 21 depicts the comparative fertility of the West solely upon a weather basis. As in the preceding map, no account is taken of the actual soil conditions which govern fertility.

Within the shaded area upon this map, over a period of years, wheat-growing (without the aid of irrigation) should pay better than within the unshaded area. It is very unlikely, however, that in any particular year, yields of wheat will ever follow approximately the proportions as indicated by the lines upon the map. Local soil conditions and other local factors no doubt should modify considerably the more favourable area as depicted upon this map.

The chief features of difference between this map and the preceding map are the decrease in the favoured area in Alberta, and the increase in the favourable area in Saskatchewan. In Manitoba the change is much less noticeable. It would appear that, except possibly in northern Alberta, the total area in the West most suitable for general agriculture has already been entered and that the future, from this viewpoint, will be largely confined to the better development of these already tried areas. We note that the poorest districts of the "dry belt" contain areas enclosed by the line, -20 per cent of average fertility. Looking northward to the area enclosed by this line, as the probable limit of successful agriculture of the type at present practised, we find very little territory for extension in Saskatchewan but fairly large areas in Alberta and Manitoba where general weather conditions in the long run are no more inimical to success than they have proved to be in the "dry belts" of the south.

Most of the other maps dealing with the climate of the West are self-explanatory and give a survey of average and extreme conditions over a period of years.

FIGURE 4

AVERAGE ANNUAL TOTAL PRECIPITATION IN INCHES.

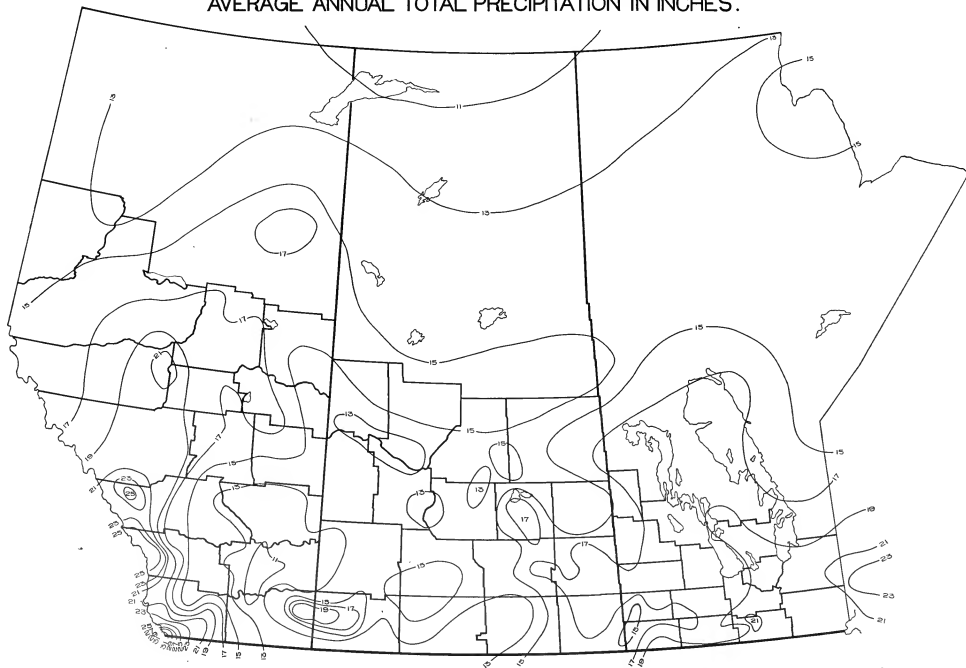


FIGURE 5

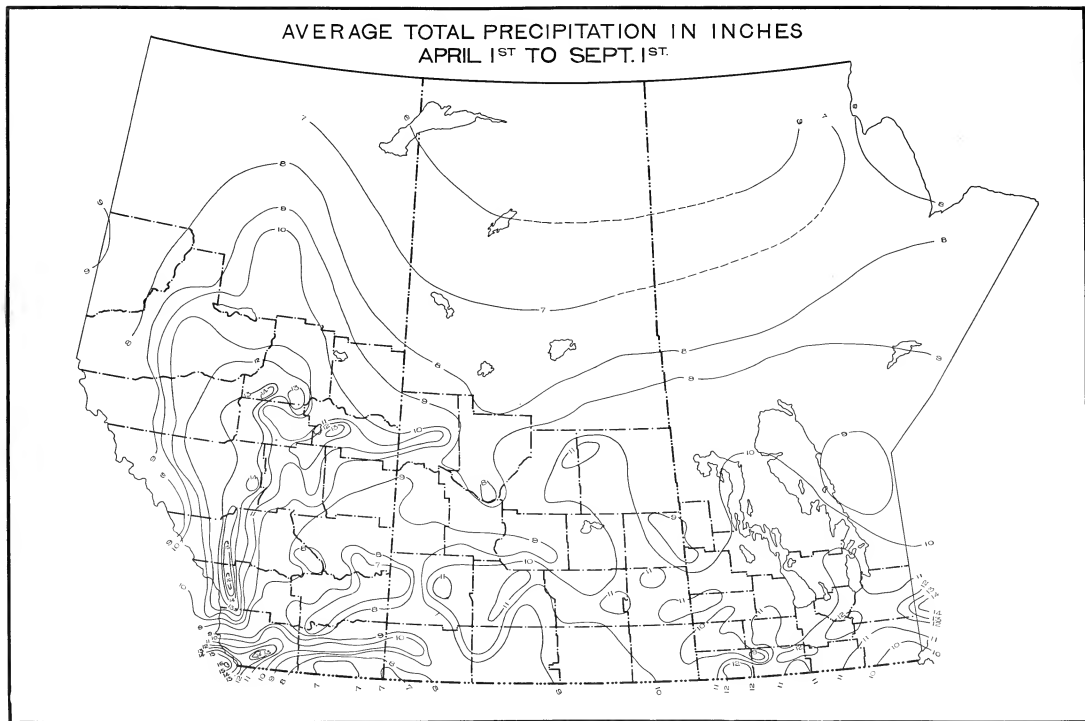


FIGURE 6

MEAN TEMPERATURE OF SUMMER, FAHR. JUNE, JULY AND AUGUST.

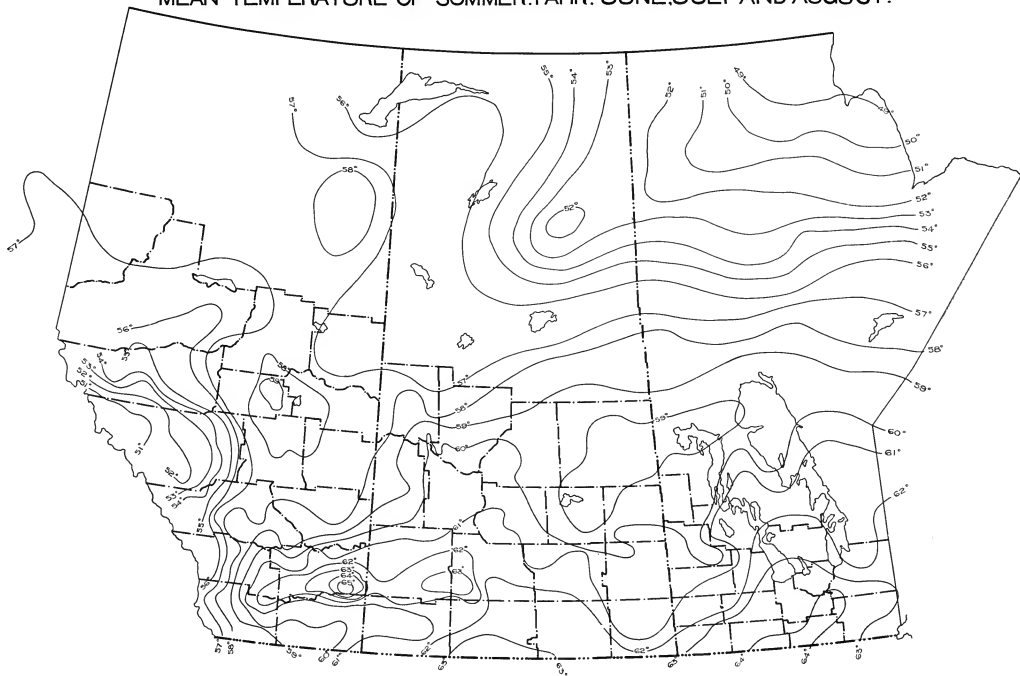


FIGURE 7

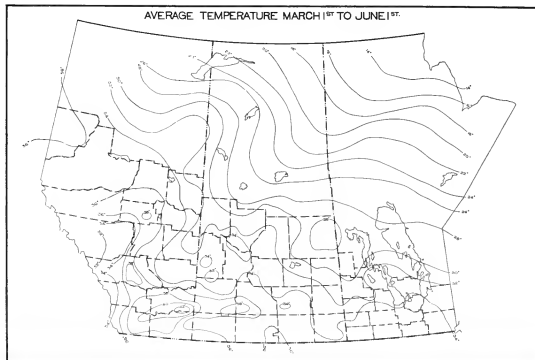


FIGURE 8

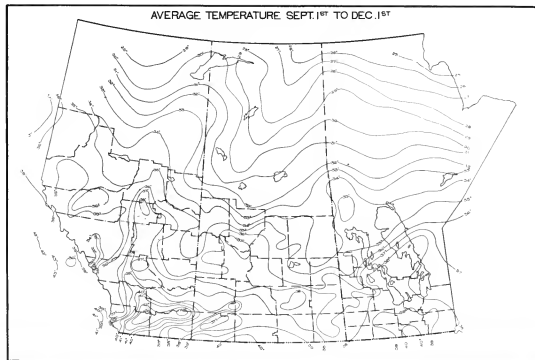


FIGURE 9

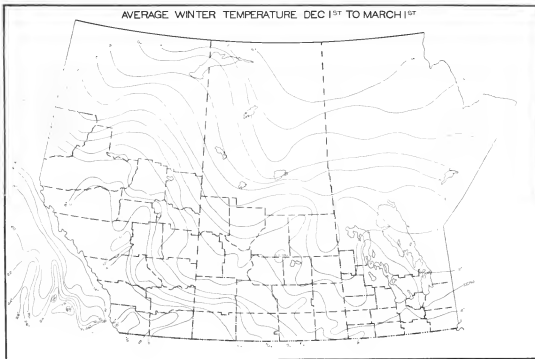


FIGURE 10

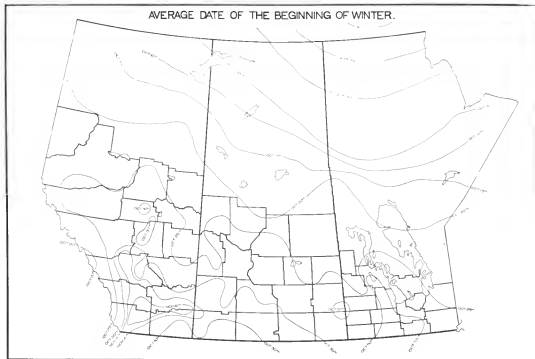




FIGURE 11

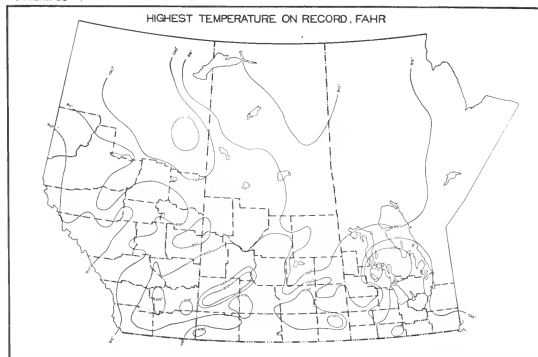


FIGURE 12

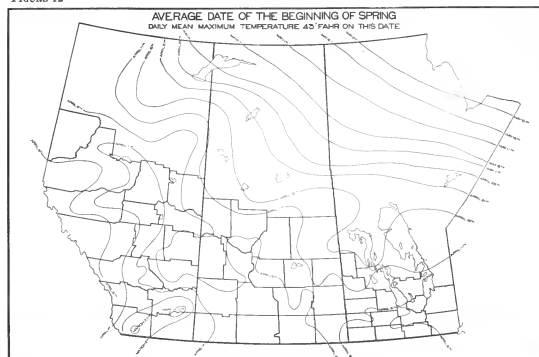


FIGURE 13

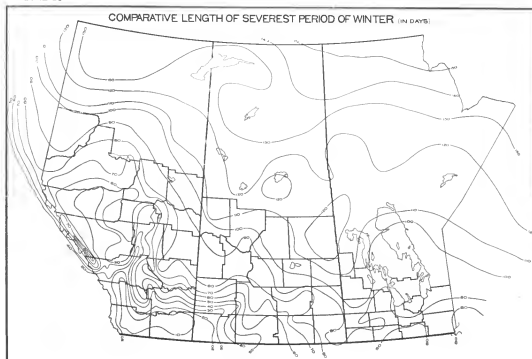


FIGURE 14

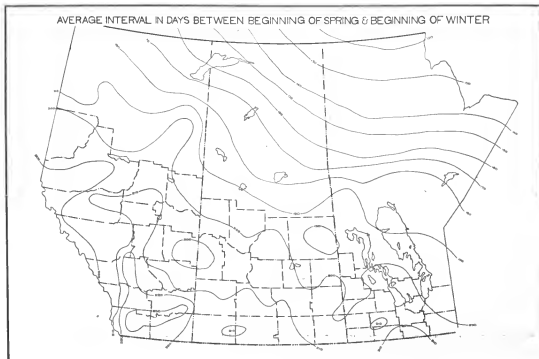


FIGURE 15

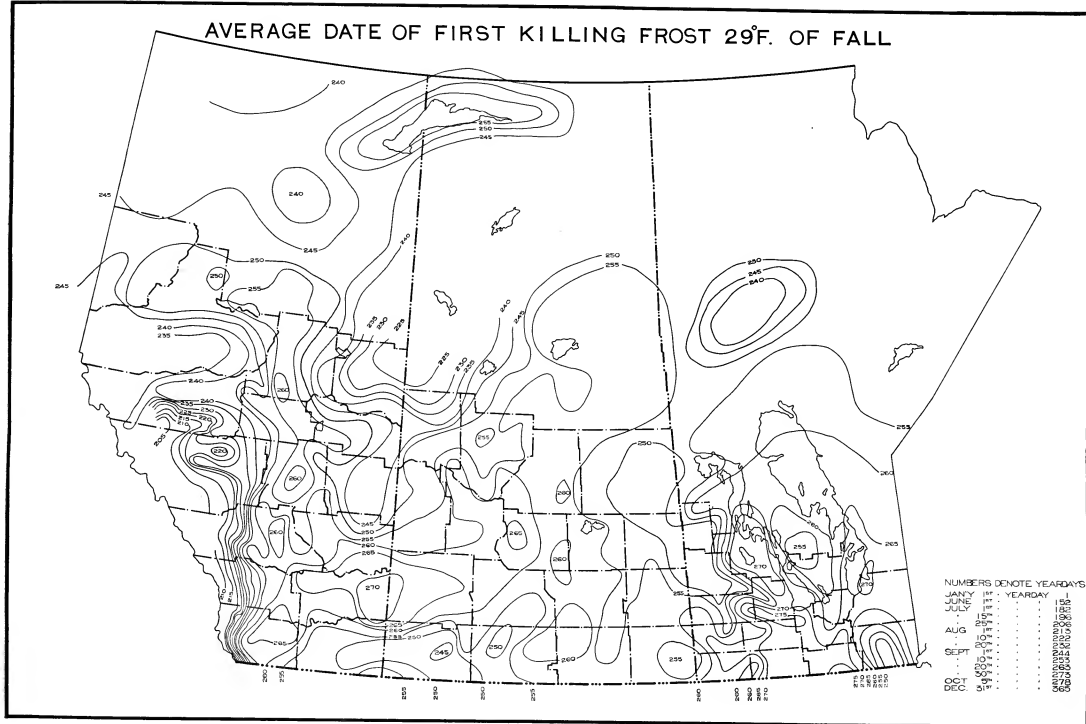
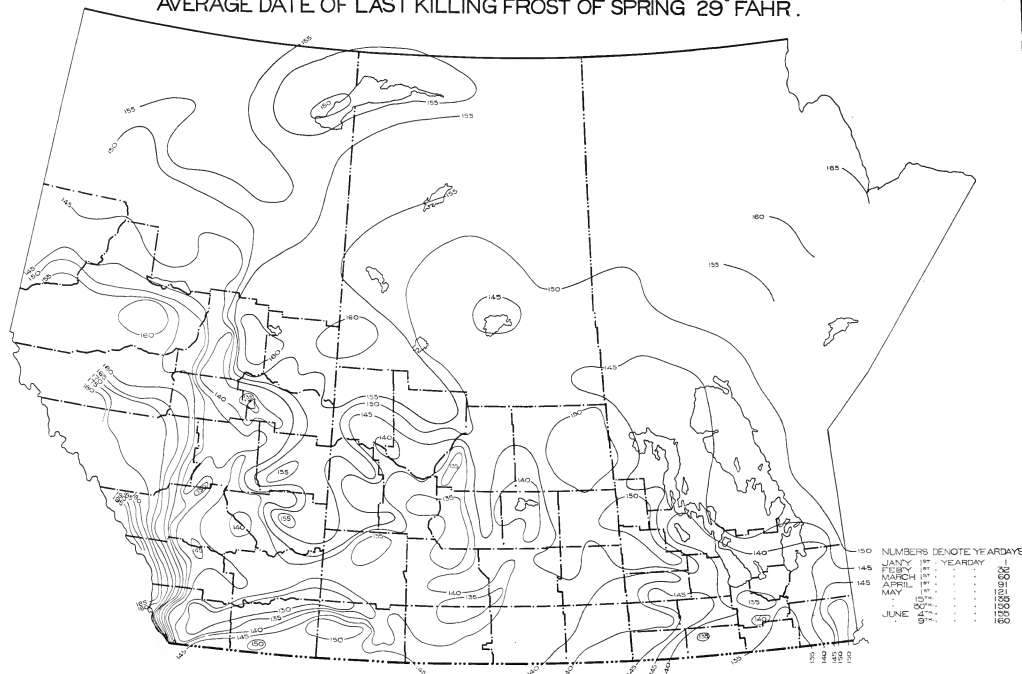


FIGURE 16

AVERAGE DATE OF LAST KILLING FROST OF SPRING 29° FAHR.



## CLIMATE

FIGURE 17

AVERAGE LENGTH OF PERIOD IN DAYS BETWEEN LAST KILLING FROST OF SPRING (29° FAHR).  
AND FIRST KILLING FROST OF FALL.

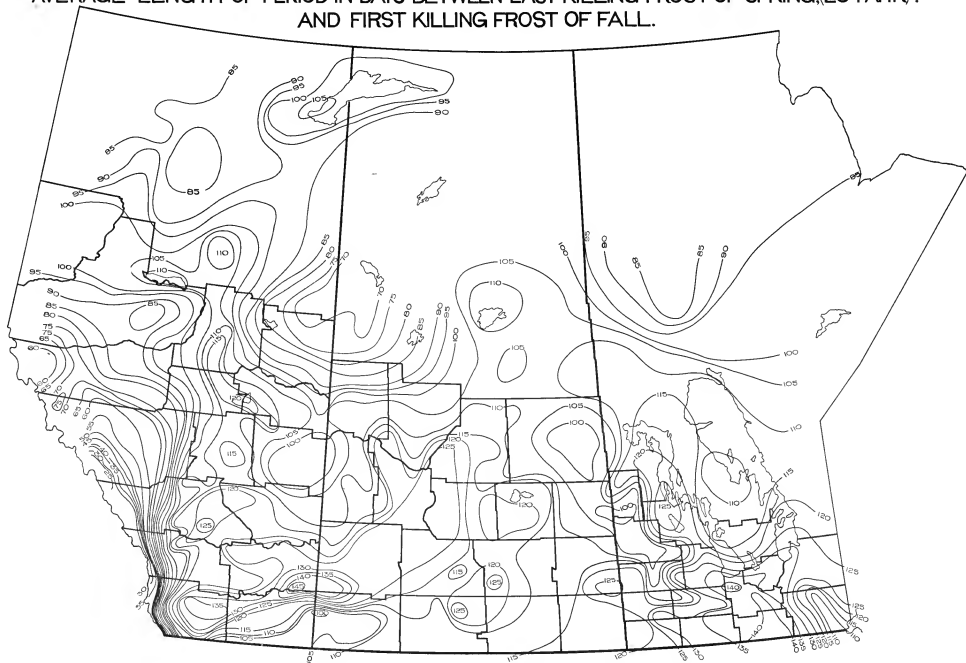


FIGURE 18

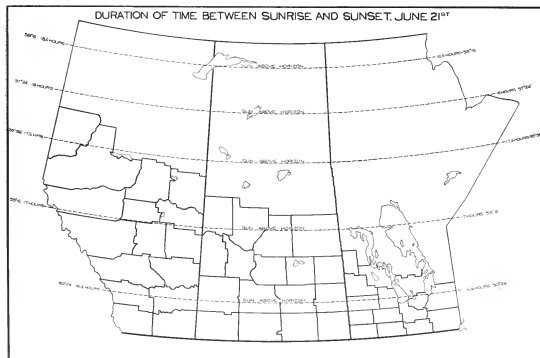


FIGURE 19

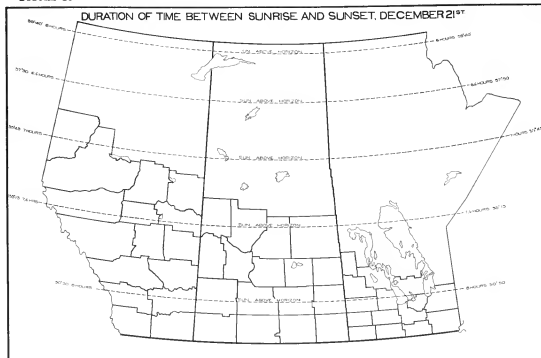


FIGURE 20

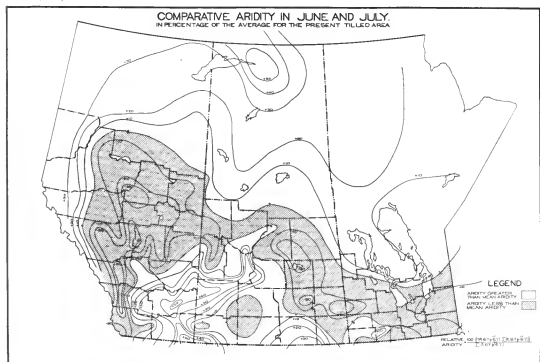
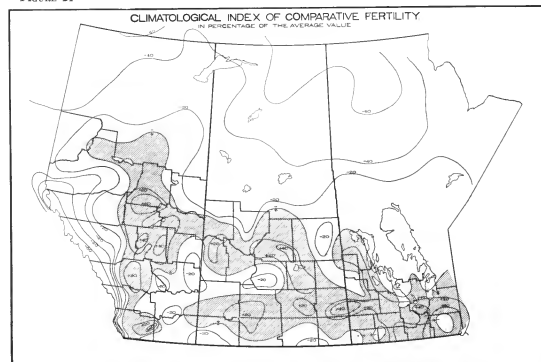


FIGURE 21



## PHYSICAL FEATURES AND SOILS

THE prairie region of Western Canada is a vast grassy plain sloping northward and eastward from southwestern Alberta and dropping at two well-defined escarpments from an elevation of over 2,000 to 500 feet. The plain is thus divided into three parts; that in the east varying in altitude from 500 to 1,000 feet; the central portion from 1,000 to 2,000 feet; and the western, from 2,000 to 5,000 feet. The western boundary of the first or eastern level follows a line from Morden in southern Manitoba northward, skirting the west shore of lake Winnipegosis. This scarp is more abrupt and its contour more regular than that between the second and third levels. Set a little back from its edge and overlooking the plain below is a series of flat-topped hills—the Pembina, Riding, Duck and Porcupine mountains. The first level is the most even of the three and the smallest. It includes the Red and part of the Assiniboine River valleys and a strip of land running northward from Portage la Prairie to Dauphin. The northern coniferous forest crosses the international boundary some miles west of the eastern border of Manitoba and takes a semi-circular sweep north and westward to the southern end of lake Winnipeg and thence in a northwesterly direction to Athabasca Landing, a point about 100 miles north of Edmonton, its margin closely following the southwestern edge of the Precambrian shield until the latter swings north in western Saskatchewan. This forest barrier together with poorer soils and a rapid decrease in the length of the growing season north and east of Winnipeg and on the higher altitudes in the Duck and Riding Mountain regions have combined to confine most of the agriculture on this level to the district south and southwest of the lakes.

The second level stretches westward to a line running in a north-westerly direction from a point on the international boundary a few miles west of Estevan in southeastern Saskatchewan through Battleford. The wide valleys of the North and South Saskatchewan rivers extend like long inland lays far into the third level increasing the irregularity of the horizontal contour of the second scarp. This second level is by no means even country. It is broken by an intermediate belt of high land running N.W.-S.E. and including the Touchwood, Beaver and Moose Mountain plateaux. The forest has receded farther north, permitting the extension of agriculture beyond Prince Albert, and while precipitation is less than in the low-lying plain to the east, growth is rapid and the season of sufficient length to permit of successful agriculture.

The third level extends to the foothills in southern Alberta. On passing northward the high land swings off toward the northwest and the controlling factor becomes the northwestern forest whose eastern

margin continues almost due north to a point about 50 miles northwest of Edmonton. Except for the fertile valley of the Peace, the agriculture in this region is at present confined to a triangular shaped area with vertices at Estevan, Cardston and Edmonton. Along the southern side of this triangle following the international boundary westward, are three plateaux, the Wood, Cypress and Milk River, forming a northward facing scarp. These high elevations mark the southern limit of grain growing in western Saskatchewan and Alberta. Rough topography, poor soil and a shorter growing season on their level summits combine with a general shortage of moisture to discourage cultivation. Nevertheless, they provide large areas of good grazing for live stock, particularly sheep and cattle. As in the case of the second prairie level, the undulating plains in the western portion of the region are broken by a number of lower, scarp-faced plateaux scattered about more or less irregularly, particularly in the western parts of both Saskatchewan and Alberta. On these higher levels the layer of glacial till is usually thinner than that found on the adjacent lower-lying prairies and the summits are often strewn with gravel and boulders.

An outstanding feature of the two western levels is the network of deep furrows cut by the principal rivers and their tributaries. These river bottoms are often two or three hundred feet below the level of the surrounding plain. The Oldman, Bow and Red Deer rivers unite to form the South Saskatchewan which flows east and north—past Prince Albert—to join the North Saskatchewan coming east from Edmonton en route to Hudson bay.

Large areas between these main rivers have inland drainage giving rise to numerous shallow lakes. Some, like Beaver Hill lake and lake Johnstone on the third level, and Last Mountain and the Quill lakes on the second, are of considerable size. Others are little more than sloughs. In the drier areas many of these are alkaline. In other parts they provide a water supply for stock and furnish the surrounding land with the necessary moisture for a luxuriant growth of grass for hay. The country for a hundred miles south of Edmonton is riddled with small to moderate sized lakes; while ponds and marshes are found in thousands of the smaller depressions which dimple the gently rolling surface of great sections of the prairie region.

As has already been stated, precipitation is at a minimum in southeastern Alberta and southwestern Saskatchewan. It increases in amount on passing westward to the foothills, northward to the great coniferous forests and eastward to the lower levels of the first prairie step. The dry belt is practically treeless except for a few shrubs in

the gullies and on the higher levels of the Cypress and adjacent plateaux. Most of this district is covered with short prairie grass and care must be taken to avoid overstocking the ranges. Northward and eastward the grass becomes more abundant and eventually, as precipitation increases, it grows tall and luxuriant and clumps of poplar appear on the open prairies. These mark the approach of the "park" or "grove" belt which extends in a semi-circular manner around the upper border of the Great Plains. It varies in width from 100 miles in Manitoba to 200 in eastern Saskatchewan, decreasing to between 50 and 75 miles in central and western Saskatchewan, extending again to over 200 miles in northern Alberta and tapering off down the western boundary of the region to between 10 and 15 miles at the southern corner of Alberta. This belt includes most of the dairying and mixed farming areas which have thus far developed in the Canadian West.

The soils of the Prairie Provinces are glacial in origin, being derived from the local shales and limestones. Detailed analyses disclose many varieties often existing within quite small areas. Generally speaking, the soils on the wooded margin of the region are of the gray bush type while those on the grass land plains vary from black or nearly black in the moister tall grass section to light brown in the dry belt, passing through the intermediate shades as precipitation decreases. These soils are high in nitrates, lime and potash, particularly nitrates, and are very fertile except where sandy, alkaline or poorly drained. Fortunately, the absence of a connecting layer of moisture between the top soil and the ground water level (except in the irrigated districts) prevents the leaching of the mineral salts during the summer months and in winter the ground is frozen. The dry cold of the winter season also prevents the decomposition of organic matter before spring when precipitation, temperature and other climatic factors combine to promote rapid and intensive growth. About three-quarters of the total annual precipitation occurs in the growing season. Such conditions are responsible for the native grasses which, except in the extremely arid portion, cover the unbroken prairies. The decaying roots of this grass land vegetation have supplied the soil with humus and are the principal cause of its favourable texture. The amount of humus is greater in the subhumid black-earth section and decreases with the decline in precipitation towards the dry belt.

On the level areas the rainfall carries down lime and other soluble materials from the surface layers to depths depending upon its amount and penetration. A layer of these accumulations underlies the surface by an amount varying from three to five feet on the forest's edge to between six and nine inches in the very arid parts. Indeed, in the dry belt alkali spots frequently occur at the surface.

**PHYSICAL MAP OF  
MANITOBA, SASKATCHEWAN  
AND  
ALBERTA**

Scale of Miles  
0 100 250

**LEGEND**

Under 1000 ft.	[Shading]
1000 to 1500 ft.	[Shading]
1500 to 2000 ft.	[Shading]
2000 to 3000 ft.	[Shading]
3000 to 5000 ft.	[Shading]
5000 ft. and over	[Shading]

Geographical features and locations labeled include: Northwest Territories, Hudson Bay, Ontario, United States, Great Slave Lake, Fort Smith, Winnipeg, Regina, Edmonton, Prince Albert, North Battleford, Swift Current, Moose Jaw, Weyburn, Brandon, and various lakes and rivers.

Prepared by  
National Geographic Bureau  
Ottawa, Canada.

Prepared by  
National Development Bureau  
Dept. of the Interior  
Ottawa, Canada.

# PHYSICAL FEATURES AND SOILS

FIGURE 23

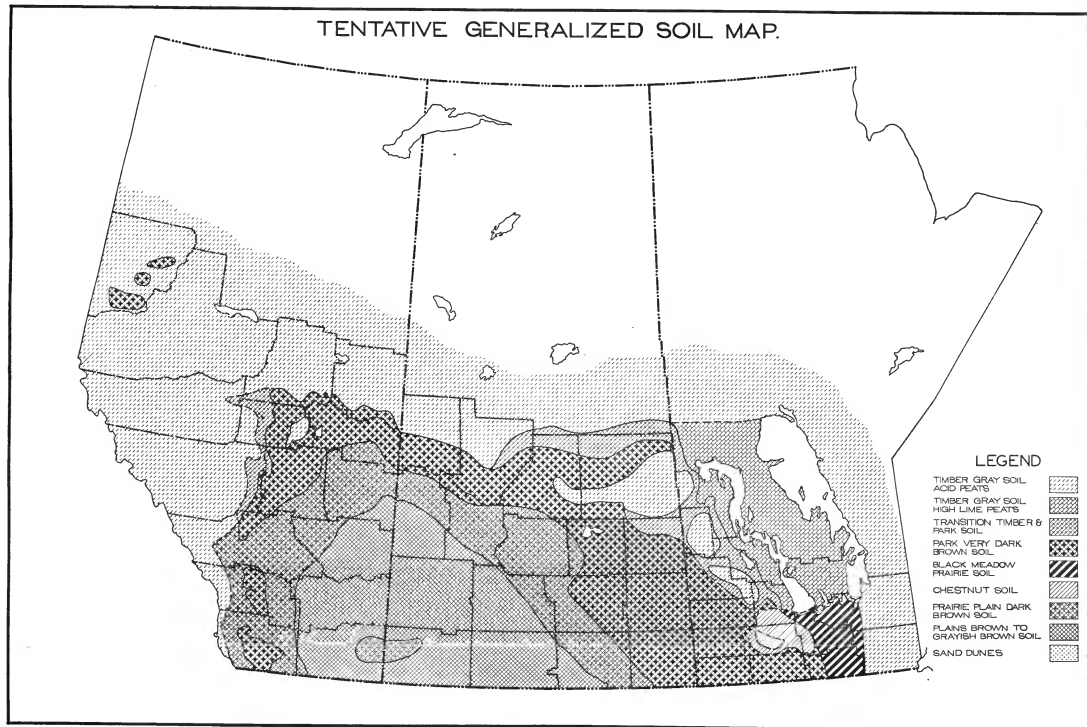


FIGURE 23.—As the title of this map implies, the boundaries of the different soil types are placed only tentatively at present and the classification is rather general. Soil surveys, which are conducted by the provincial governments, are not yet complete but the authorities gave every possible assistance in incorporating the provincial data into this first map of its kind which has appeared for the entire West.



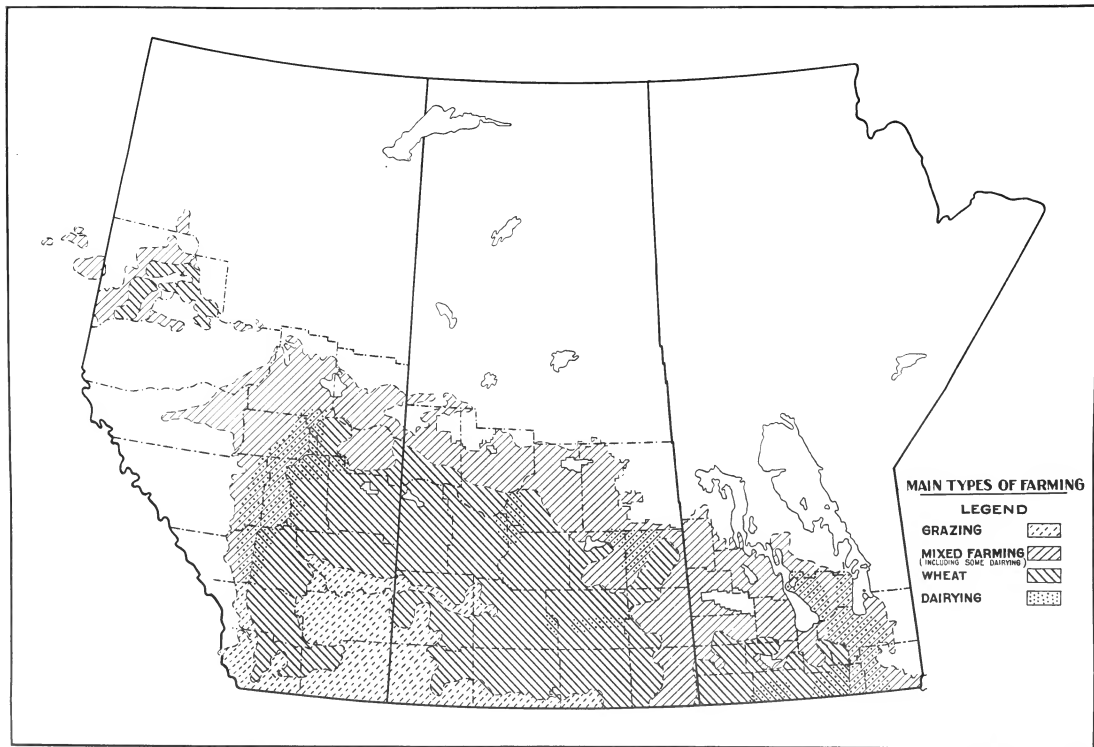


FIGURE 24.—For the purpose of constructing this map the National Development Bureau defined the agricultural system in areas where wheat acreage was greater than the combined acreage of all other field crops as "Wheat farming"; where wheat acreage was less than that of all other field crops, as "Mixed Farming"; where the value of dairy products was equal to or greater than that of wheat, as "Dairying"; and where grazing leases predominated and wheat acreage constituted less than 16 per cent of the total land area, as "Grazing." The details of the boundaries were carefully adjusted in the light of local topography and checked against the dot maps for cereals, live stock and animal products.

## LAND UTILIZATION

DURING the twenty-five years, 1901-1926, the area of occupied farm land in the prairie region increased from 15,000,000 to 90,000,000 acres, or sixfold. In 1901, the Prairie Provinces contained 24.3 per cent of the total occupied farm acreage in the Dominion; in 1921, 62.4 per cent. Similar changes occurred in the proportions of Canada's improved and crop land situated in the West, the ratios for improved land being 18.5 and 63.2 per cent in 1901 and 1921 respectively, and for field crops 18.2 per cent and 64.8 per cent. Since 1921, agricultural expansion in the Prairies has continued at a more rapid pace than in the East though no precise figures will be available before the next census.

FIGURE 25

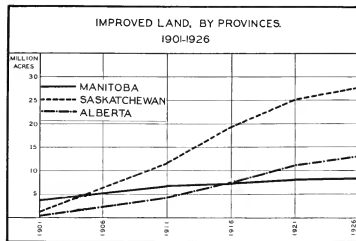


FIGURE 25—In 1901, improved land in the region was less than 5,000,000 acres; in 1926, it exceeded 40,000,000 acres, nearly a nine fold increase in twenty-five years.

In 1921, as much as 51.0 per cent of the occupied land in the region was already improved as compared with the moderately higher figures of 58.2 per cent for Ontario and 52.5 per cent for Quebec. The bringing-in of occupied acreage under cultivation continues to proceed rapidly. Between 1921 and 1926, in spite of an increase of 1,000,000 acres in farm land, the proportion improved rose from 51.0 per cent to 55.4 per cent, and present indications are for a percentage as high as in Ontario by 1931. Eventually it will be considerably higher because of the peculiarly favourable topography of the prairies. Despite the rapid influx of settlers, in no interannual period since the opening of the century has improved acreage failed to increase faster than occupied. An appreciably larger proportion of the improved land is in field crops than obtains elsewhere in Canada. In 1926 it amounted to 71.0 per cent.

The following table traces the changing trend in land utilization with the progress of settlement in the several provinces:—

TABLE 1  
PERCENTAGE INCREASES<sup>1</sup>

Province	Occupied acreage	Improved acreage	Field crop acreage	Wheat acreage	Oats acreage	Barley acreage	Hay and forage acreage
MANITOBA—							
1901-1911.....	37.8	68.8	69.4	40.4	110.7	197.9	342.0
1911-1916.....	10.3	6.5	-0.9	-11.9	10.4	53.4	-8.5
1916-1921.....	8.8	12.1	14.5	3.4	24.2	19.7	-11.4
1921-1926.....	-1.5	3.6	6.7	-26.0	-7.6	112.6	81.8
SASKATCHEWAN—							
1901-1911.....	633.0	957.5	948.3	767.8	1231.6	994.6	1267.5
1911-1916.....	31.0	65.4	51.8	71.8	62.5	34.0	87.0
1916-1921.....	19.6	27.5	27.5	29.4	28.2	14.3	10.2
1921-1926.....	4.4	10.7	9.7	16.1	-19.3	107.7	93.6
ALBERTA—							
1901-1911.....	534.6	816.7	997.0	1943.0	565.1	998.5	1709.0
1911-1916.....	32.8	72.6	68.0	68.9	73.9	106.1	47.7
1916-1921.....	27.0	55.4	54.8	87.6	19.8	16.1	45.1
1921-1926.....	-2.4	12.2	7.4	26.0	-24.8	6.4	20.5

<sup>1</sup> Negative sign signifies a decrease.

<sup>2</sup> Based on acreage of crops harvested in 1900 and 1910.

In the early stages of settlement, field crop acreage expanded more rapidly than improved in all three provinces. Each year the homesteader broke and cultivated as much new land as time and equipment permitted. The following season this land was sown to cereals and thereafter it was cropped for a period of years without interruption. The growth in field crops was, therefore, cumulative and the proportion of improved land in crops increased rapidly. The annual amount of new breaking, on the other hand, was constant to decreasing and formed a progressively smaller proportion of the total improved. But as soon as the settler got established he discontinued the uneconomical practice of continuous cropping and put an increasing proportion of his land in summer fallow. Henceforth, field crop

FIGURE 26

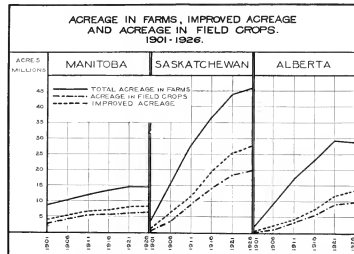


FIGURE 26—The rapid growth of occupied, improved and field crop acreage which characterized Saskatchewan and Alberta prior to 1921 has slackened. Most of the desirable free agricultural land is now occupied.

acreage grew less rapidly than improved, a situation that continues to the present time in both Saskatchewan and Alberta. In Manitoba, on the other hand, a trend towards mixed farming and longer rotations set in, replacing in large measure the use of fallow and bringing about a relatively more rapid growth in the field crop acreage.

This tendency towards diversification in Manitoba is readily traced in the accompanying tables as is the continued and increasing emphasis on wheat in Saskatchewan and Alberta, the latter being associated with the growing use of summer fallow.

In the Prairie Provinces as a whole, approximately 25 per cent of the crop land is devoted to the growing of feed for live stock and 75 per cent to cash crops.<sup>1</sup> Of the acreage used for feed crops about 60 per cent is sown in oats and between 20 and 25 per cent in barley. From 80 to 85 per cent of the land used for cash crops is in wheat. This marked dependence on cash crops is one of the outstanding characteristics of the region. Such systems of farming inevitably involve declining soil fertility—a phenomenon which is already in evidence in the older settled parts of the West, in so far as the trend in per acre yields and in nitrogen and phosphorous soil content may be taken as criteria. As has already been noted, a resultant shift towards live stock, especially dairying, has been in progress in the moister portion of the region, but in the drier areas, specialization in cash crops, particularly wheat, is still on the increase.

From the standpoint of land utilization, four more or less distinct types of farming may be said to exist in the Prairie Provinces: First, wheat growing; second, mixed farming; third, dairying (usually associated with wheat growing or mixed farming); and fourth, ranching. Data have been compiled from the 1926 Census illustrating the first three types and appear in the adjacent table. Three Census Divisions in central Saskatchewan, 7, 8 and 12, have been selected to represent wheat growing; Census Divisions 11, 13 and 14 in Manitoba for mixed farming; and one Census Division adjacent to each of the three cities, Winnipeg, Prince Albert and Edmonton, for dairying.

<sup>1</sup> Crops raised for sale in their existing form and for the purpose of augmenting directly the farmers' money income.

TABLE 2  
TYPES OF FARMING IN THE PRAIRIE REGION, 1926

	Per 1,000 acres in Field Crops			Per 1,000 acres Occupied		
	Wheat farming	Mixed farming	Dairying	Wheat farming	Mixed farming	Dairying
ACREAGE—						
Improved.....	.....	.....	.....	670	480	430
Field crops.....	.....	.....	.....	460	365	330
Wheat.....	771	267	444	534	97	150
Oats.....	157	377	288	72	157	97
Barley.....	15	289	173	7	105	38
FARM ANIMALS—						
Cattle.....	41	115	130	19	42	44
Cows milked.....	11	33	48	5	12	16
Swine.....	19	48	114	9	18	38
Sheep.....	11	12	19	5	6	6
Horses.....	50	64	74	26	23	25

<sup>1</sup> Number of cows milked in 1925 in terms of field crops and occupied acreage in 1926.

FIGURE 27

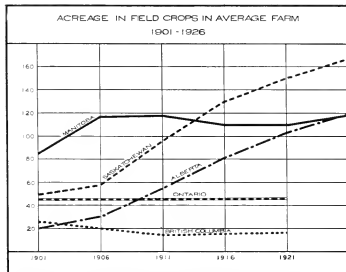


FIGURE 27.—Field crop acreage in the West continues to expand though more slowly than before 1921. In 1926, 56 per cent of the crop acreage was in Saskatchewan, 26 per cent in Alberta and 18 per cent in Manitoba.

Ranching is practically confined to the dry area in southwestern Saskatchewan and southeastern Alberta and to a strip of land extending from the international boundary northward along the foothills to beyond Calgary. Wheat growing predominates in southwestern and central Alberta, throughout the whole of Saskatchewan save for the northern and eastern fringe and the dry belt, and in southern Manitoba, although in the latter area, the proportion of other cereals and forage crops is growing rapidly. Mixed farming is found in northern and western Alberta and in the northern and eastern parts of both Saskatchewan and Manitoba—in other words, over practically the whole of the park belt. It is also the dominant type of farming in the irrigated districts. The greater development in dairying has occurred in eastern Manitoba, northeastern Saskatchewan and northwestern Alberta. An interesting and significant combination of dairying and wheat farming occurs south of Winnipeg, in the Yorkton and Saskatoon-Prince Albert districts and east and south of Edmonton.

TABLE 3

LAND UTILIZATION IN THE PRAIRIE PROVINCES, 1901-26

	Improved acres per 1,000 acres occupied	Field crop acreage per 1,000 acres improved	Wheat acreage	Barley acreage	Oats acreage	Horses	Cattle	Swine	Sheep	Wheat acreage	Barley acreage	Oats acreage	Horses	Cattle	Swine	Sheep
	Per 1,000 acres in field crops									Per 1,000 acres occupied						
MANITOBA—																
1901.....	432	690	713 <sup>1</sup>	51 <sup>1</sup>	208 <sup>1</sup>	59 <sup>1</sup>	127 <sup>1</sup>	46 <sup>1</sup>	11 <sup>1</sup>	222 <sup>1</sup>	16 <sup>1</sup>	65 <sup>1</sup>	19	40	14	3
1911.....	554	765	600	87	253	54	84	37	7	254	37	107	23	36	15	3
1916.....	535	712	533	134	282	66	111	43	15	203	51	107	25	42	16	6
1921.....	551	727	481	141	306	63	113	35	19	193	56	123	25	45	14	8
1926.....	579	750	333	281	264	56	101	50	18	145	122	115	25	44	22	8
SASKATCHEWAN—																
1901.....	293	584	743 <sup>1</sup>	18 <sup>1</sup>	216 <sup>1</sup>	128 <sup>1</sup>	410 <sup>1</sup>	42 <sup>1</sup>	101 <sup>1</sup>	127 <sup>1</sup>	3 <sup>1</sup>	37 <sup>1</sup>	22	70	7	17
1911.....	422	770	575	30	255	56	69	31	13	187	10	83	18	23	10	4
1916.....	533	712	646	26	271	61	74	38	9	245	10	103	23	28	15	3
1921.....	569	712	656	24	273	62	74	24	11	265	10	110	25	30	10	4
1926.....	603	706	693	45	300	58	61	31	8	295	19	85	25	26	13	4
ALBERTA—																
1901.....	174	397	228 <sup>1</sup>	39 <sup>1</sup>	625 <sup>1</sup>	492 <sup>1</sup>	1,714 <sup>1</sup>	244 <sup>1</sup>	462 <sup>1</sup>	16 <sup>1</sup>	4 <sup>1</sup>	43 <sup>1</sup>	34	118	17	32
1911.....	251	776	485	49	361	121	219	70	40	94	9	70	23	43	14	8
1916.....	326	733	473	61	386	119	214	110	54	113	15	92	28	51	26	13
1921.....	402	724	573	46	299	97	164	50	51	167	13	87	28	48	15	15
1926.....	462	694	672	45	299	88	130	77	55	216	15	67	28	42	25	11

<sup>1</sup> Based on acreage in 1900.

<sup>2</sup> Based on field crop acreage in 1900.

<sup>3</sup> Based on crop acreage in 1900 and occupied acreage in 1901.

FIGURE 28

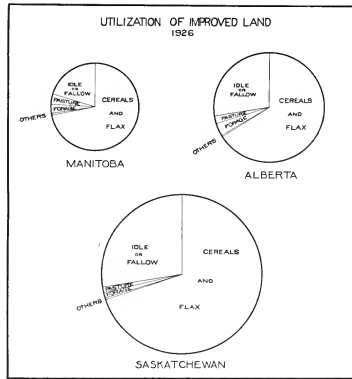


FIGURE 28.—The areas of the circles are proportional to the improved acreage in the respective provinces. Saskatchewan leads in the proportion of improved land in cereals and flax; Alberta and Manitoba show very similar and relatively high percentages in pasture and forage crops. Manitoba, with more diversified farming and longer rotations, has reduced the proportion of idle and fallow land much below that obtaining in the other provinces.

## LAND UTILIZATION

FIGURE 29

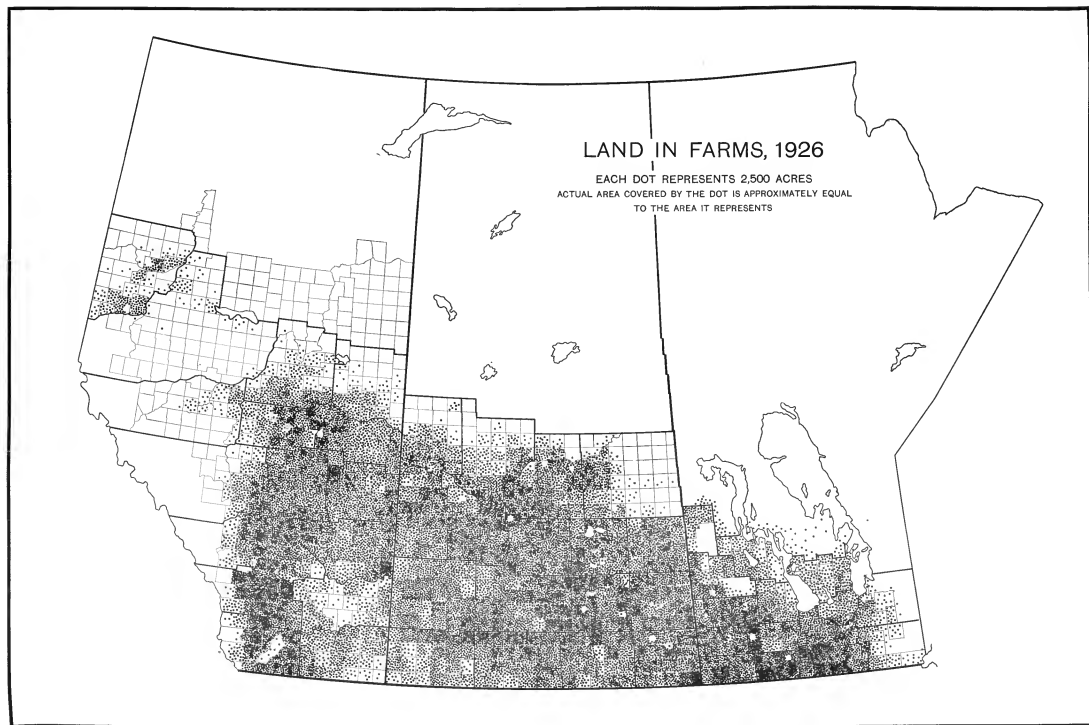


FIGURE 29.—Generally speaking, agricultural settlement has already reached the mountain barrier on the West, the heavily wooded lake and muskeg areas to the North and the barren rocky waste lands to the East. Considerable land is still available, however, for the farmer with means in the well-settled districts and large tracts await the homesteader in the Peace River area. In Saskatchewan settlers are pressing north-eastward along the southern shore of the Saskatchewan river.

FIGURE 30

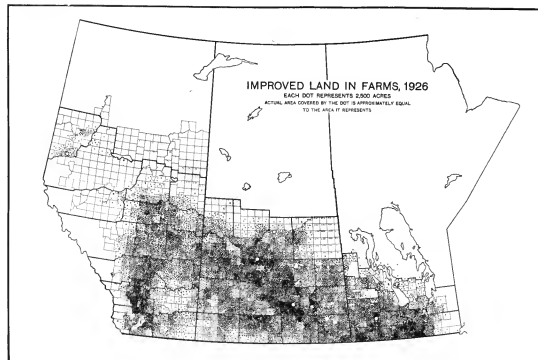


FIGURE 31

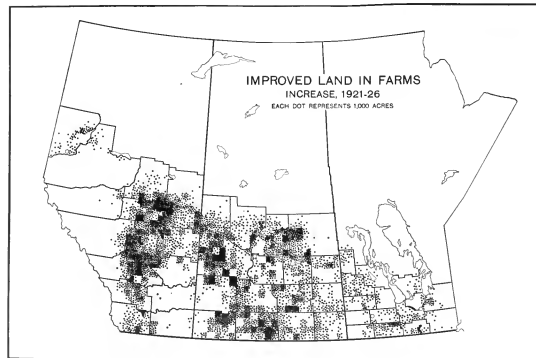
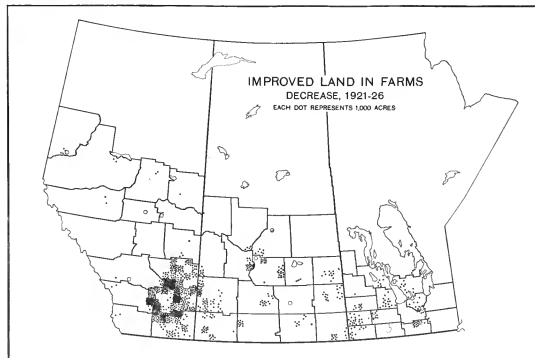


FIGURE 32



FIGURES 30-32.—Improved land includes "all land which has been brought under cultivation and is fitted for producing crops." Much of the potential crop land in the region is still uncultivated. The largest proportions of improved are found in the older settled parts of southern Manitoba, on the level grain growing plains of central Saskatchewan and in the wheat and irrigated districts of western and southern Alberta. Less of the land is improved in the more recently settled park belt areas where a great deal of clearing has to be done and in the semi-arid grazing areas where lack of moisture discourages, and in some parts, precludes the growing of cereal crops. The increases in acreage of improved land in the five-year period were fairly general over Saskatchewan and central Alberta, while the exodus from the dry belt of southern Alberta caused the main decrease.

## LAND UTILIZATION

FIGURE 33

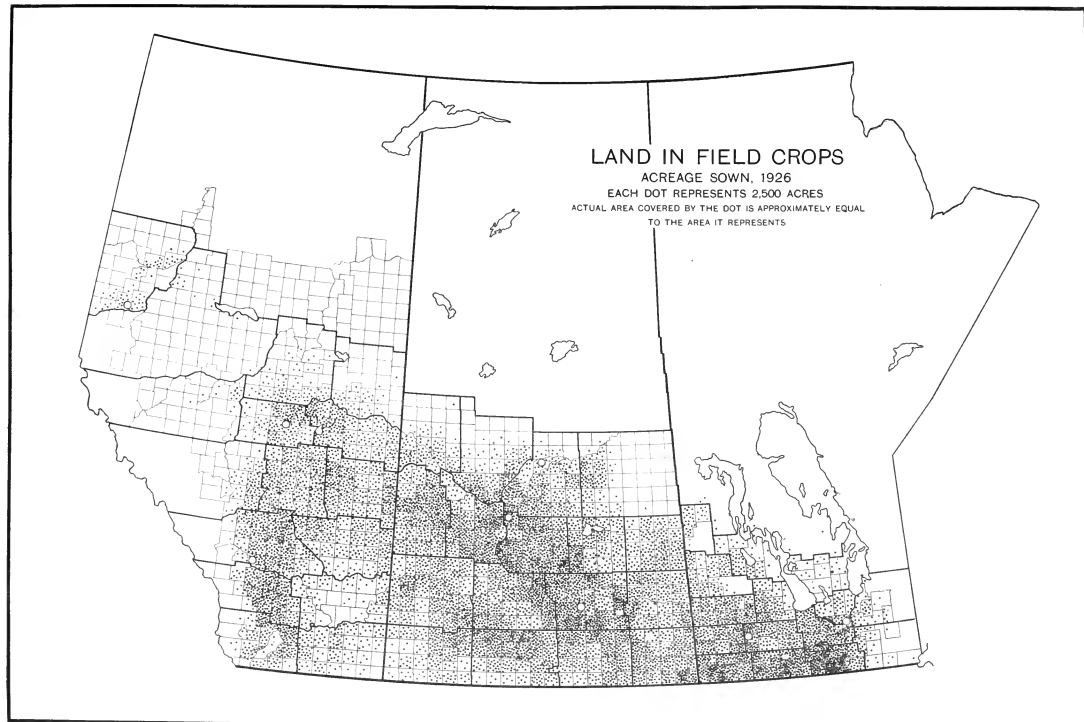


FIGURE 33.—Over 65 per cent of the crop land of the Dominion is situated in the prairie region and despite recency of settlement more of the occupied acreage is in crops (41 per cent) than in the rest of Canada (33 per cent in 1921). Exceptionally favourable topography and soil fertility are largely responsible. Further expansion in field crops may be expected with the introduction of longer crop rotations and the consequent reduction of summer fallow, with the continued advance of large scale mechanized agriculture into the dry belt and with the bringing under cultivation of new land on the northern fringe of settlement.

FIGURE 34

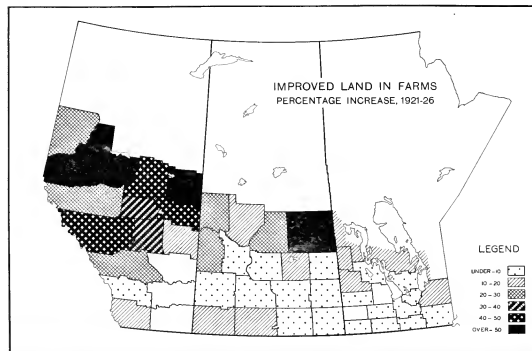


FIGURE 36

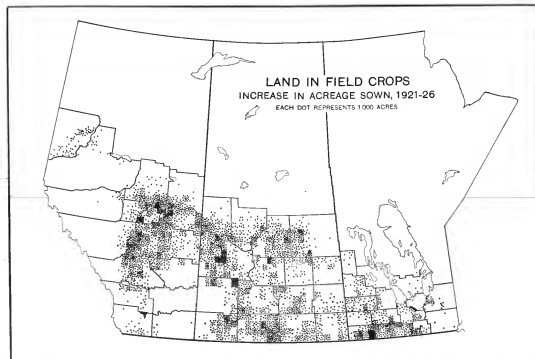


FIGURE 35

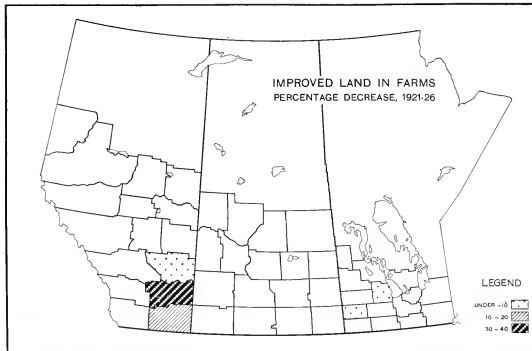
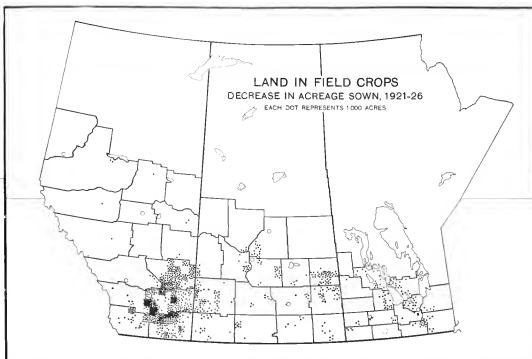


FIGURE 37



FIGURES 34-37.—Between 1921 and 1926, the relative increase in both improved and field crop acreage was greater in northern and western Alberta and northeastern Saskatchewan, particularly in the Carrot River district, than in other parts of the West; i.e. in the more recently settled areas. Significant absolute increases also occurred in western and southern Saskatchewan, where wheat farming is being pushed farther into the dry belt. Just prior to 1926, a considerable area in southeastern Alberta was evacuated on account of drought and many settlers left the lake district in northern Manitoba because of poor soil.

WHEAT is western Canada's premier crop. Red Fyfe was the leading variety from 1882, the date of its introduction into the West, to 1908 when Marquis made its appearance. Marquis combined the advantages of an early date of maturity and higher yields with greater strength of straw and non-shattering habits. Within six or seven years it was more generally grown than any other variety, and by 1920 it is credited with occupying at least 90 per cent of the spring wheat acreage.<sup>1</sup> During recent years, the plant breeder has been busy developing new, productive, early maturing and rust resisting wheats, but Marquis still holds its place as the most important variety grown, and will probably continue to do so for some years at least.

In 1876, the area in wheat in the Prairie Provinces was only 15,000 acres; in 1929, approximately half a century later, it totalled over 24,000,000 acres. In 1890, western Canada produced 42.3 per cent of the wheat grown in the Dominion; in 1910, 83.5 per cent; in 1920, 91.4 per cent; and for the period 1924-28, 94.0 per cent. The normal crop now amounts to nearly 400,000,000 bushels, and the acreage continues to increase, not only in the newly settled regions but in many of the older agricultural sections, particularly in Saskatchewan and Alberta where the tractor, combine and other heavy machinery have united with the relatively higher returns per acre to stimulate the production of this cereal. In Manitoba, however, wheat production is declining.

The proportions of the total field crop acreage devoted to this cereal are tabulated in the following table for census years, 1900 to 1926 inclusive:—

TABLE 4  
PROPORTION OF FIELD CROP ACREAGE IN WHEAT

Province	1900	1906	1911	1916	1921	1926
	p.e.	p.e.	p.e.	p.e.	p.e.	p.e.
Manitoba.....	71.3	64.5	60.0	53.3	48.1	33.3
Saskatchewan..	74.3	64.7	57.5	64.6	65.0	69.3
Alberta.....	22.8	24.4	48.5	47.3	57.9	67.2
Total.....	69.3	69.2	56.5	58.4	60.2	62.3

In 1900, over 70 per cent of the field crop acreage in Manitoba was in wheat, in 1926 only 33 per cent, the proportion having fallen steadily throughout the period. In Saskatchewan, wheat production has kept pace with the increase in other crops; indeed, during the past five years it has grown somewhat more rapidly for reasons already explained. As settlement expanded in Alberta, grain growing, and especially wheat producing, became increasingly important in the agricultural economy of that province, with the result that in 1926 wheat constituted 67 per cent of the acreage in field crops as compared with less than 25 per cent twenty-five years earlier.

<sup>1</sup> L. H. Newman, Dominion Cerealist, Pamphlet 89—New Series, Department of Agriculture.

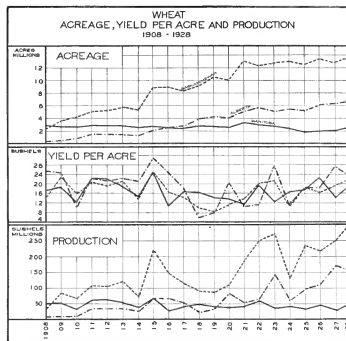


FIGURE 38.—In Saskatchewan and Alberta the trend of wheat acreage has been definitely upward since 1908, but in Manitoba it has been constant to slightly declining. Alberta has the highest average yield per acre.

Saskatchewan now produces about six-tenths of the wheat of western Canada; Alberta, three-tenths; and Manitoba, one-tenth. Normally all the wheat except that which is unmarketable, fed to live stock, saved for seed or milled locally is shipped out of the region, the estimated surplus constituting about 75 per cent of the average crop.

Wheat is relatively more important in the semi-arid than in the sub-humid section of the Prairies, a fact which doubtless has much to do with the occurrence of wider fluctuations in yield per acre than obtain with the other small grains. The uncertainty of yield is particularly noticeable in Saskatchewan and Alberta where a considerable portion of the wheat acreage is on or near the margin of requisite precipitation. An idea of the risk involved in the production of this cereal is given by the standard deviations and coefficients of variation<sup>1</sup> in per acre yields for the 21-year period 1908-1928, by provinces.

TABLE 5  
VARIATION IN PER ACRE YIELD, 1908-28

Province	Coefficient of variation	Standard deviation
	p.e.	bush.
Manitoba.....	23.0	3.9
Saskatchewan.....	27.2	4.6
Alberta.....	36.2	7.0

The speculative character of wheat raising is seen to vary widely. Not only are the coefficients of variation higher than for the other cereals, but the spread as between the different sections of the region is more marked. Statistics of crop failure tell a similar story.

Although the chances of crop failures are greater in Alberta, the average yield per acre has been appreciably higher. For the 21-year period to which reference has been made wheat averaged 19.3 bushels per acre in that province as against approximately 17.0 bushels in both Manitoba and Saskatchewan.

In all three provinces the trend in per acre yield was downward from 1908 to 1923 and then turned upward. A cycle of favourable climatic conditions was doubtless a contributory cause of the general improvement in yields following 1923, but in Saskatchewan and Alberta, the bringing of large areas of virgin land under cultivation with the resumption of settlement appears to have been a determining factor. In Manitoba, the effect of the shift from wheat to barley and oats production has been to confine the growing of wheat to areas where soil and climatic conditions favoured higher yields. Since 1929, the downward trend has been resumed, yields per acre being consistently below the previous five-year average (1924-28) in all provinces except in one year (1930) in Manitoba.

<sup>1</sup> The standard deviation expressed as a percentage of the mean.

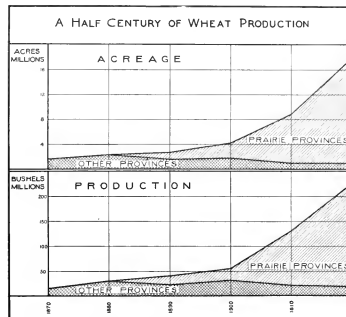


FIGURE 39.—From insignificant beginnings, the production of wheat in the Prairie Provinces has increased until to-day it constitutes 85 per cent of the Canadian wheat crop.



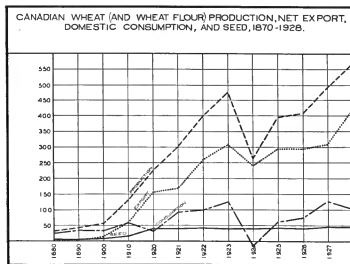


FIGURE 40.—Canada has become the world's greatest wheat exporter, about 300,000,000 bushels annually. Approximately 85 per cent is consigned to the United Kingdom, 3 per cent to the United States and 12 per cent to other countries, mostly European.

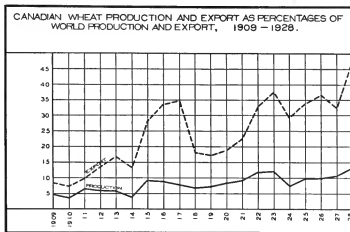


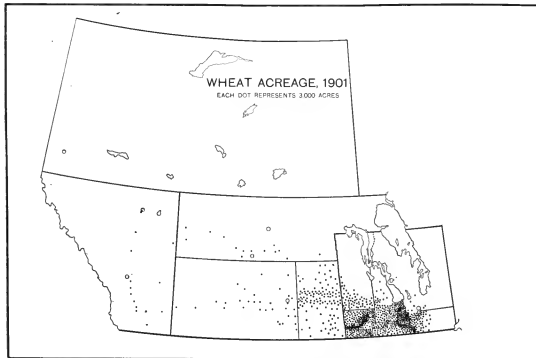
FIGURE 41.—In the period 1909-1913, Canada produced 5.2 per cent of the world's wheat and contributed 11.2 per cent to the world's export of wheat and flour. Between 1924 and 1928 she raised 10.1 per cent of the world's wheat and her wheat and flour exports constituted 35.8 per cent of the world's export surplus.

TABLE 4  
YIELD PER ACRE (FIVE-YEAR AVERAGE)

Province	1909-13 bush.	1914-18 bush.	1919-23 bush.	1924-28 bush.
Manitoba.....	19.0	16.7	14.2	18.2
Saskatchewan.....	20.0	15.9	15.0	17.4
Alberta.....	20.4	20.5	15.6	20.1

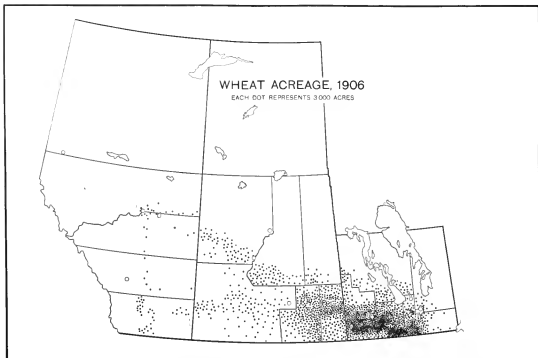
Up to the present wheat has proved the best cash crop in the Canadian West. The relative shortage of labour and capital, the elaborate organization for storing, transporting and financing the marketing of this product, the comparative stability of price as compared with live stock, and the general high level of returns per acre attendant on an expanding world demand, have combined during the past quarter of a century to bring about a high degree of specialization in the production of this cereal. However, as agriculture passes through the pioneer stage, a more permanent type of farming is established, wheat becomes relatively less important in the farm economy and more elaborate rotations are introduced. This transition, of course, is conditioned by the presence of adequate precipitation. As has already been pointed out, this change is already under way in some of the older parts of the park belt, particularly in Manitoba. The future of wheat production in the arid districts is by no means definitely established.

FIGURE 42



FIGURES 42, 43.—In 1901, wheat production was largely confined to the Red and Assiniboine River valleys in Manitoba and to the district flanking the railway to Regina, though scattered pioneers were growing small amounts as far west as Calgary and Edmonton. During the next five years the acreage increased in Manitoba, spreading north, and expanded rapidly both in southeastern Saskatchewan and along the railways into southern and northern Alberta.

FIGURE 43



## WHEAT

FIGURE 44

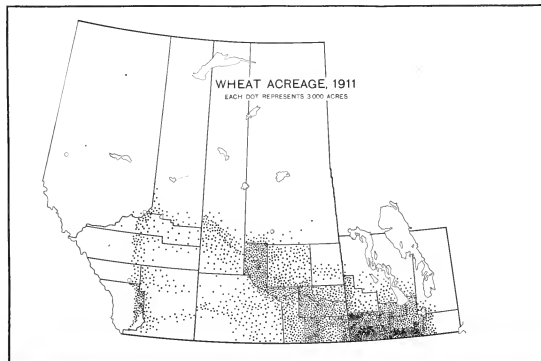


FIGURE 46

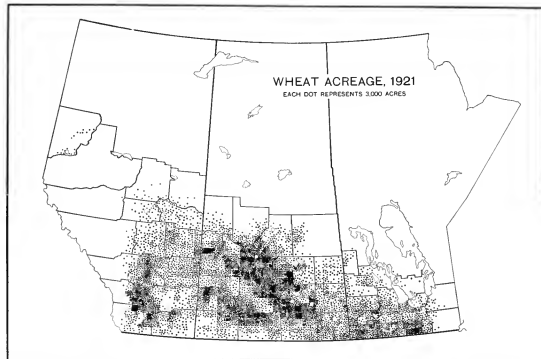


FIGURE 45

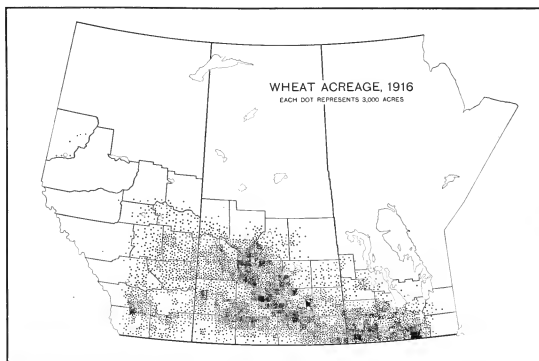
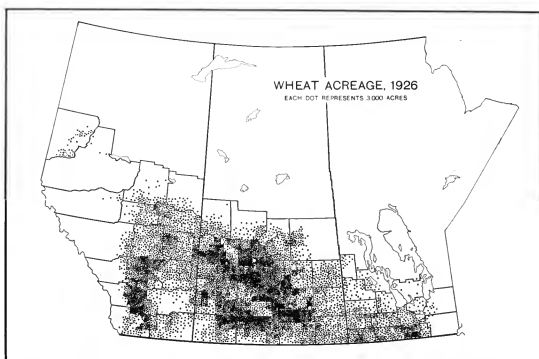


FIGURE 47



FIGURES 44-47.—The next five years (1906-1911) witnessed a marked increase in acreage generally throughout the West, particularly in western Alberta, and by 1911 the first agricultural settlement had appeared in the Peace River district. By 1916, central Saskatchewan and eastern Alberta had become important wheat producing areas and the newly built railway was carrying a stream of settlers into the Peace. The following five years are notable for the beginning of the decline of the wheat acreage in Manitoba and the concurrent increase in Saskatchewan and Alberta, particularly in southwestern Alberta. Between 1921 and 1926, trends of the previous inter-censal period continued, a distinctive feature being the reduction in acreage in the dry belt of southeastern Alberta. The railway has been a dominating factor in the expansion of wheat acreage as of settlement generally.

FIGURE 48

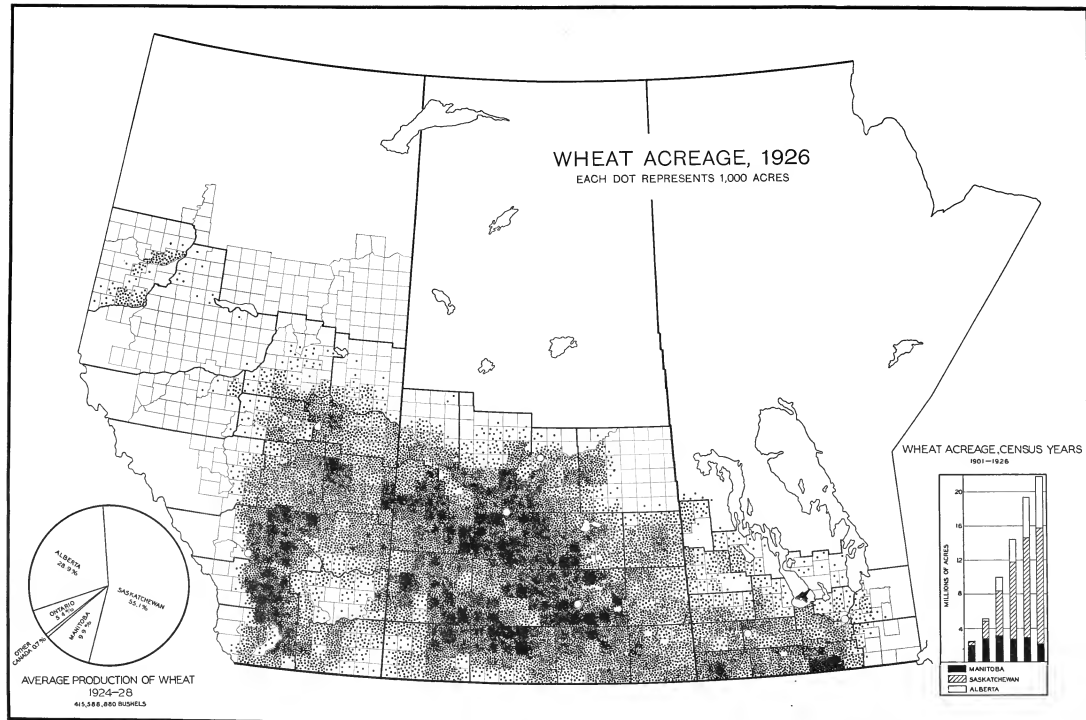


FIGURE 48.—The Prairie Provinces have well been called a “spring wheat region” since except for a small acreage in Alberta, no winter wheat is grown. Spring wheat is produced in quantities in almost every section of the settled portion of the region and has penetrated farther into the dry belt than has any other cereal. The areas of greatest production are southern Manitoba, central and southern Saskatchewan and western Alberta.

FIGURE 49

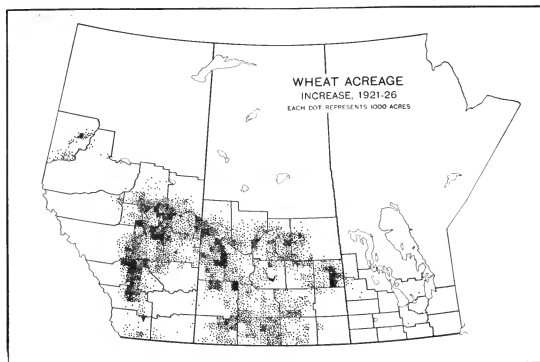
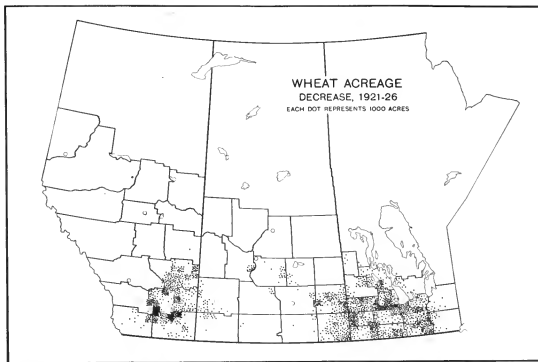


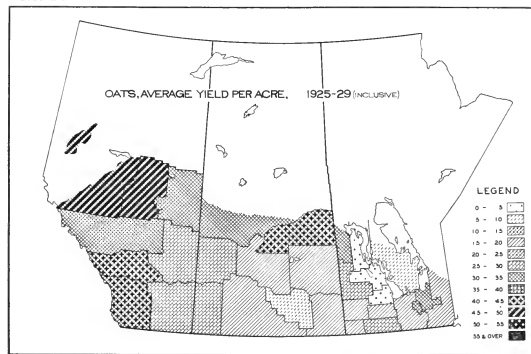
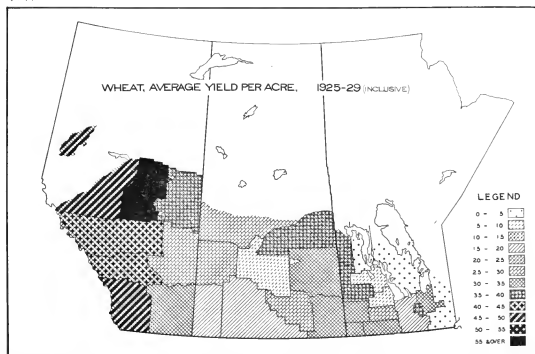
FIGURE 50



FIGURES 49, 50.—Significant changes are occurring in the distribution of wheat acreage in the West. In Manitoba it has been declining in favour of oats and barley. In southern Alberta a series of droughts led to the virtual evacuation of certain municipalities. Mechanization has been increasing wheat acreage in the semi-arid central and southern parts of Saskatchewan, and in the northern and western portions of both Saskatchewan and Alberta wheat acreage has been expanding with settlement.

4753

FIGURE 52



FIGURES 51, 52.—The average yields per acre of wheat and oats correlate roughly with the amount of precipitation, the highest returns being harvested along the park belt and foothills. The drier areas of central Saskatchewan are much more effectively used for wheat, than for oat, production. With the exception of southwestern Alberta, the regions of greatest wheat acreage are also the regions of lowest yields (compare Figure 48). The same condition does not hold for oats (compare Figure 53).

OATS are second in importance among the cereal crops of the prairie region. The acreage devoted to this crop is now about one-third that of wheat for the region as a whole, despite an appreciable decline in the ratio since 1925. The decline, however, was due not so much to an absolute decrease in oats as to an increase in wheat (in Saskatchewan and Alberta). During the three years 1927-1929, wheat acreage in the West increased nearly three million acres, while oat acreage remained practically constant. Manitoba is unique among the provinces of the region in having nearly three-quarters as much land in oats as in wheat. Between 1900 and 1920, the proportion of cultivated land in oats in that province increased from 21 to 31 per cent, but in recent years barley acreage has expanded more rapidly and partly at the expense of oats. This shift was reversed between 1930 and 1931. In Saskatchewan, the relative importance of oats increased somewhat during the first two decades of the century, but of late the extensive use of mechanical power and more elaborate machinery has combined with the price factor to produce a disproportionate expansion in wheat acreage. In Alberta, there has been a drastic and continuous reduction in the percentage of field crop acreage devoted to oats since the beginning of the century—the proportion dropped from 62.5 in 1900 to 20.9 per cent in 1926; this change is associated with the transition from a ranching and meat producing economy to a cereal (wheat) growing type of agriculture with the heavy inflow of homestead settlers.

The proportions of the total acreage in field crops devoted to oats in the three provinces were as follows:—

TABLE 7  
PROPORTION OF FIELD CROP ACREAGE IN OATS

Province	1900	1906	1911	1916	1921	1926
	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.
Manitoba.....	20.8	22.1	25.3	28.2	30.6	26.4
Saskatchewan.....	21.6	27.6	35.5	37.1	27.3	20.0
Alberta.....	62.5	51.0	36.1	38.6	29.9	20.9
Total.....	23.2	27.5	27.5	29.9	28.6	21.4

In 1890, the prairie region produced only 12.0 per cent of the Canadian oat crop; in 1910, 43.3 per cent; in 1920, 59.5 per cent; during the five-year period 1924-1928, however, the proportion fell to 58.7 per cent. The western oat crop now amounts to 250,000,000 bushels (average 1924-1928), of which approximately 70 per cent is consumed locally. The yield per acre is normally lower than in Ontario but higher than in Quebec and New Brunswick, the average for the five years 1924-1928 being 30.3 bushels per acre for western Canada as compared with 37.6 bushels for Ontario, 27.1 for Quebec and 28.1 for New Brunswick.

As in the case of the other cereals, conditions of production and the element of risk vary considerably within the region. Between

FIGURE 53

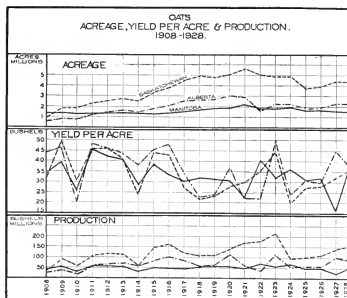


FIGURE 53.—The trend of oat acreage has been upward in the West until recent years. An appreciable downward trend in yield per acre has occurred since 1908.

FIGURE 54

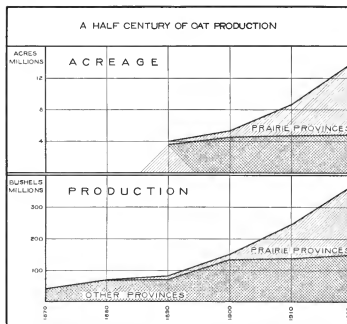


FIGURE 54.—From a negligible proportion in 1880, the production of oats in the prairie region has increased to approximately three-fifths of the total Canadian crop.

1908 and 1928 the mean yield per acre in Alberta was about three bushels higher than in the other provinces, the figures being as follows:—

TABLE 8

MEAN YIELD PER ACRE, 1908-28

	Bushels
Manitoba.....	33.2
Saskatchewan.....	33.7
Alberta.....	36.2

Not only is the yield greater in Alberta but as with wheat it is more uncertain, the speculative character of yield increasing as one moves westward. In the 21-year period to which reference has just been made, the following are found to be the standard deviations and coefficients of variation in oat yield per acre in the several provinces.

TABLE 9

VARIATION IN PER ACRE YIELD, 1908-28

Province	Coefficient of variation	Standard deviation
	p.c.	bush.
Manitoba.....	20.3	6.8
Saskatchewan.....	26.2	8.8
Alberta.....	28.2	10.2

The uncertainty of adequate precipitation in the drier sections of the region is the principal cause of these differences.

Since 1908, the trend in oat yield per acre has been definitely downward in the prairie region although a slightly higher average obtained in Alberta during the five years centering on 1926 than in the previous quinquennial period. As in the case of wheat in that province, this is probably only a temporary interruption of the general downward movement and is attributable to transient causes, principally weather, rather than to any widespread change in rotations or to the use of fertilizers.

TABLE 10

YIELD PER ACRE (FIVE-YEAR AVERAGE)

Province	1900-13	1914-18	1919-23	1924-28
	bush.	bush.	bush.	bush.
Manitoba.....	38.8	32.5	31.3	30.5
Saskatchewan.....	42.0	32.0	32.1	28.6
Alberta.....	41.1	37.8	31.0	33.5

Banner and Victory are the chief varieties of oats grown in the region. Banner is a high yielding variety developed by the Dominion Experimental Farm at Ottawa. Victory originally came from Sweden and because of its fine kernel is used extensively for exhibition purposes.

FIGURE 55

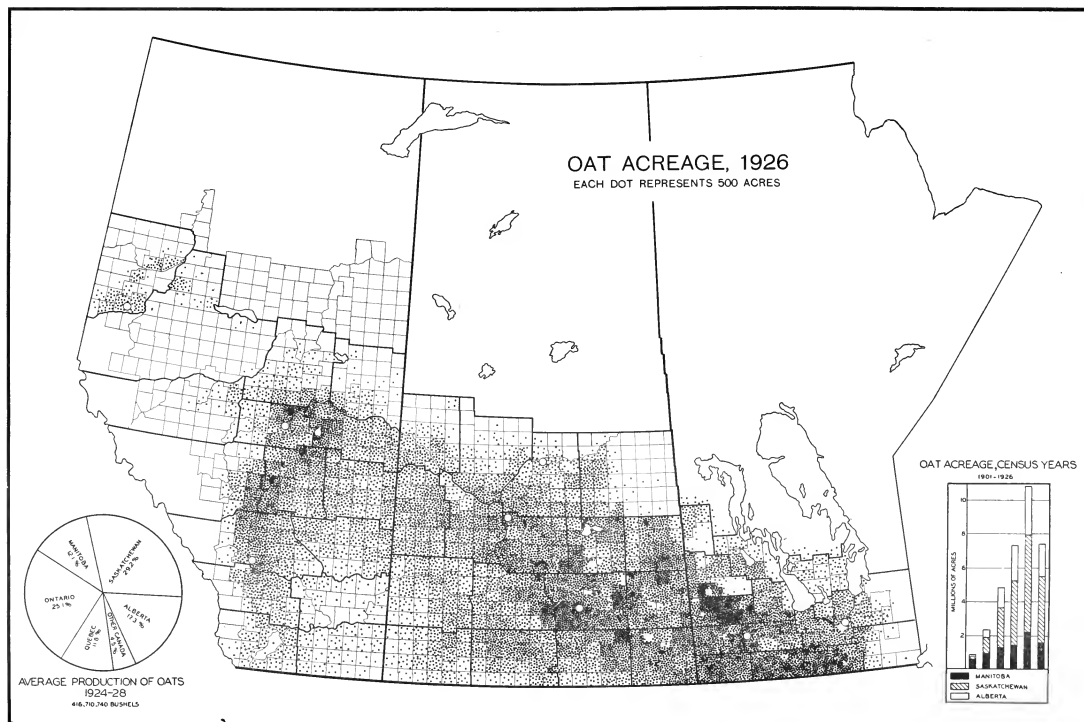


FIGURE 55.—While oat production is distributed very generally over the West its importance is greatest in the sub-humid section of the region including Manitoba, the northeastern half of Saskatchewan and northwestern Alberta. Its production falls off rapidly on approaching the dry area in southern Alberta and southwestern Saskatchewan, oats being less drought resisting than wheat. Between 1921 and 1926, oat acreage increased slightly in only a few municipalities but it decreased quite generally over the area, more especially in the Yorkton district and southeast of both Calgary and Edmonton.

**B**ARLEY ranks third among the small grains in the Prairie Provinces. In Manitoba it is even more important than oats; indeed, that province produces almost one-half the barley grown west of the lakes and over twice that grown in Ontario. Barley has the twofold advantage of being rust resisting and of requiring a shorter growing season than wheat. It is, therefore, becoming an increasingly important crop in the older settled parts of the West, especially in Manitoba and eastern Saskatchewan where the hazard from plant diseases is great and the extra ten days to two weeks of soil cultivation is a decided advantage in keeping down weeds.

In 1890, the prairie region supplied less than 10 per cent of the barley produced in Canada; in 1900, 14 per cent; in 1920, 66 per cent and between 1924 and 1928, 81 per cent. The percentages of the total acreage in field crops devoted to barley were as follows:—

TABLE II

PROPORTION OF FIELD CROP ACREAGE IN BARLEY

Province	1900	1906	1911	1916	1922	1926
Manitoba.....	5.1	8.0	8.7	13.4	14.1	28.1
Saskatchewan.....	1.8	2.4	3.0	2.6	2.8	4.5
Alberta.....	5.9	11.8	4.9	6.1	8.6	4.5
Total.....	4.5	6.2	5.0	5.7	5.1	8.7

The growth in Canadian barley production during the past quarter of a century has been due not only to a natural increase in barley acreage associated with the settlement of the West, but to a progressive

change in the proportion of the cereal acreage devoted to this crop, first in Manitoba and latterly in eastern Saskatchewan.

The yield per acre is relatively steady, the coefficients of variation during the 21-year period 1908 to 1928 ranging from 19.2 per cent for Manitoba to 22.2 per cent for Alberta, both figures being appreciably below those mentioned above for wheat and somewhat lower than those for oats. The risk increases on passing westward toward the dry area, though not to the same extent as in the case of the other grains. The normal yield per acre in Alberta is slightly higher than that of Saskatchewan, and that for Saskatchewan than for Manitoba. The explanation has probably much to do with differences in soil fertility.

The per acre yields of barley have been rising in all three provinces since the war period, but they are not yet back to the 1909-1912 level. Improvement in varieties has been a factor of some importance.

TABLE II

PER ACRE YIELD (FIVE-YEAR AVERAGE)

Province	1909-13	1914-18	1919-23	1924-28
	bush.	bush.	bush.	bush.
Manitoba.....	28.1	23.6	22.5	26.8
Saskatchewan.....	30.6	22.7	24.9	24.2
Alberta.....	28.9	25.4	25.5	26.4

About two-thirds of the barley produced in the West is consumed locally, the balance being shipped east.

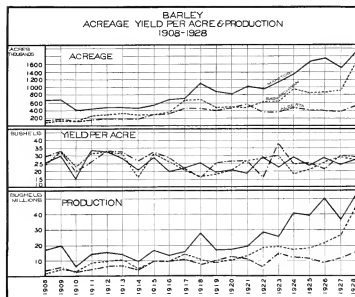


FIGURE 56.—Manitoba leads in barley acreage; Saskatchewan is second. In both provinces barley production has increased rapidly during the past ten years. The yield per acre has, on the average, been fractionally higher in Alberta.

## BARLEY

FIGURE 57

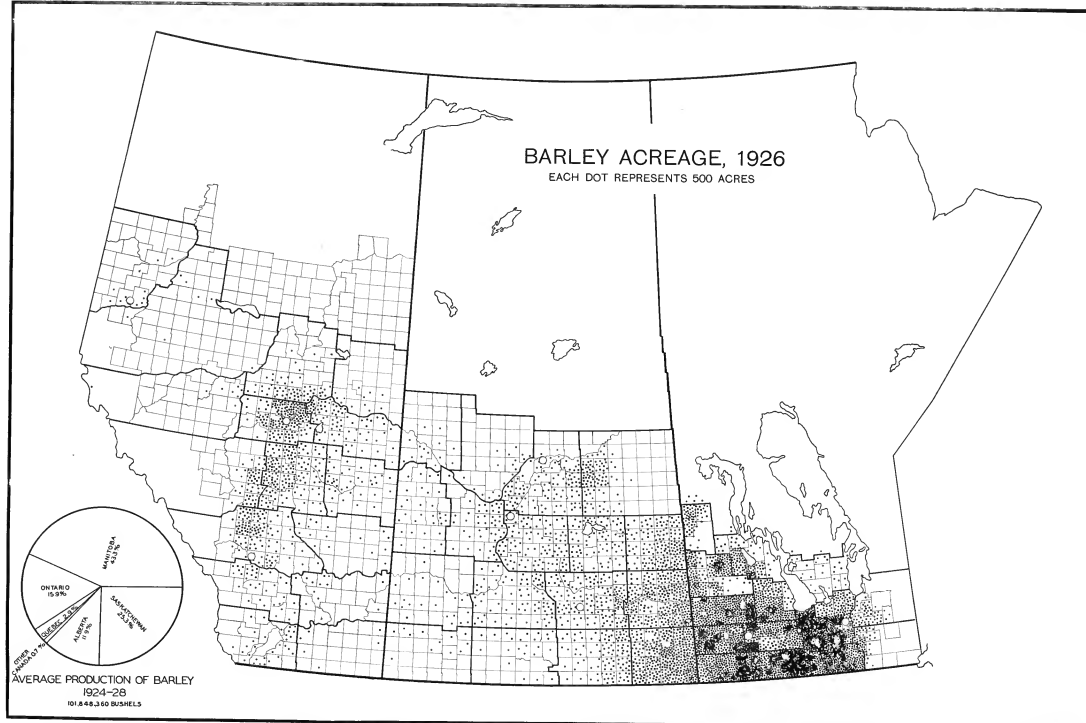


FIGURE 57.—Barley production is largely confined to Manitoba and eastern Saskatchewan, where its rust resisting qualities and shorter growing season add to the steadiness of income and facilitate the control of weeds by later spring cultivation. Some barley is grown in the dairying and mixed farming portions of western and northern Alberta, but to date the rapid increase in acreage has been confined to the eastern section of the prairie region. Attempts are being made to capture a larger portion of the European market for this western Canadian product and to this end better grades are being sought as well as greater uniformity in quality.



**F**LAX and rye are crops of relatively minor importance in the Prairie Provinces. In the five-year period, 1924-1928, the average crop in flax amounted to only 731,000 acres. Of this amount, 75 per cent was in Saskatchewan (principally in the districts southeast and southwest of Regina and Saskatoon), and 23 per cent in Manitoba. In the latter province there is a marked concentration of flax production between Winnipeg and the international boundary. It is also grown more or less generally throughout the southern portion of the province. In Alberta the land devoted to flax has dropped to below 13,000 acres, although during the years 1911, 1912 and 1913, well over 100,000 acres were planted annually.

The flax acreage in the prairie region now constitutes less than 2.0 per cent of the total land in field crops. Flax was relatively much more important during the years of maximum immigration. It was a very popular and profitable crop on newly broken land with its virgin fertility and comparative freedom from weeds. Consequently, between 1911 and 1913 when much new land was being brought under cultivation, flax production reached a peak in the West. The census of 1911 shows 7.6 per cent of all field crop acreage devoted to the growing of flax for seed. Practically no flax is grown for fibre in western Canada.

Rye acreage in the prairie region is almost as large as that of flax. It averaged somewhat over 660,000 acres in the period 1924-1928. Over three-quarters of the rye produced in the region is planted in the fall. Loss from winter killing is negligible, averaging less than 6 per cent. Approximately 45 per cent of the total rye acreage is in Saskatchewan, 31 per cent in Manitoba and 24 per cent in Alberta. The peak of production came during and in the years directly following the war. After 1922, there was a rapid decline in both acreage and output in all three provinces. This has continued to the present time in Manitoba, but since 1925 rye has regained some of its lost ground in both Saskatchewan and Alberta, though production is still less than one-half that in 1922.

Of peculiar significance is the marked downward trend in yield per acre for both flax and rye, but more particularly for flax. The average yields for the five years centering on the quinquennial census dates are tabulated below for each of these crops, by provinces.

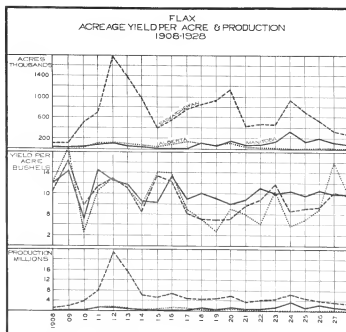


FIGURE 38.—The growing of flax for seed is especially common on newly broken land. Its acreage has consequently fluctuated widely from time to time and place to place.

TABLE 13

YIELD PER ACRE (FIVE-YEAR AVERAGE)

Province	FLAX			
	1909-13	1914-18	1919-23	1924-28
Manitoba.....	12.1	8.8	9.2	10.2
Saskatchewan.....	11.6	7.7	6.1	7.6
Alberta.....	10.0	8.8	5.5	7.6
Province	RYE			
	1909-13	1914-18	1919-23	1924-28
Manitoba.....	18.8	16.8	14.8	16.6
Saskatchewan.....	20.6	15.4	14.1	18.0
Alberta.....	24.3	20.4	13.9	13.7

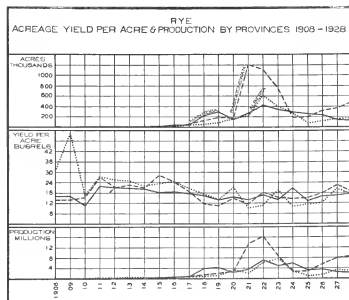


FIGURE 39.—Rye acreage increased in the West until 1921 and 1922. Since then both acreage and production have fallen off. The trend in yield per acre has been decidedly downward since 1908.

The average yields of flax per acre for the twenty year period covered in the above table were: Manitoba, 10.1 bushels; Saskatchewan, 8.3 bushels; Alberta, 8.2 bushels; and for rye, Manitoba, 16.8 bushels; Saskatchewan, 17.0 bushels; and Alberta, 18.1 bushels. Flax is the only important field crop with a higher yield per acre in Manitoba than in Alberta.

Although flax and rye are relatively unimportant as compared with other cereal crops in the West, the prairie region produces the major portion of the total Canadian output. In the five-year period, 1924-1928, approximately 86 per cent of the total rye acreage of the Dominion was in western Canada and almost 99 per cent of the flax acreage.

FIGURE 60

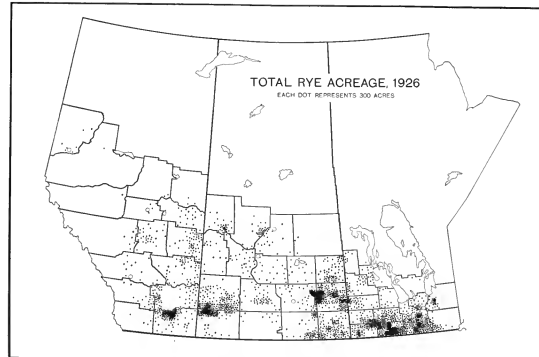
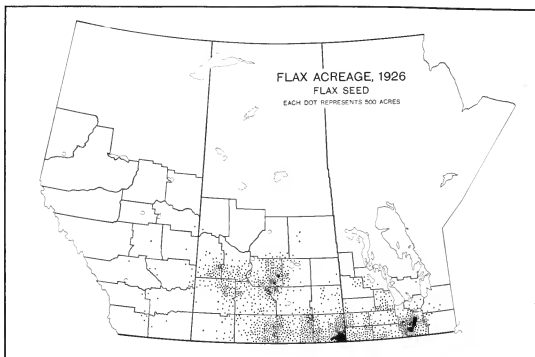


FIGURE 61



FIGURES 60, 61.—Flax for seed is grown in the southern portion of the Prairies as far west as the edge of the dry belt and in central Saskatchewan to the north and east of the semi-arid area. Most of the winter rye acreage is found in Manitoba and eastern Saskatchewan. Because of its ability to withstand early summer drought and flourish on lighter soil its culture has encroached farther into the semi-arid regions than has that of other cereals excepting wheat.

## HAY AND FORAGE CROPS

THE principal forage crop in the prairie region is hay of which wild or prairie hay constitutes about 90 per cent. Grains cut for hay and summer feeding represented 35 per cent of the total acreage in hay and forage crops in 1925, and while the amount of small grains used for this purpose varies greatly from year to year, they regularly assume second place among the forage crops. Of the perennials, the timothy, clover and alfalfa group is the most important being followed by brome grass and western rye. In recent years increasing quantities of sweet clover have been grown, chiefly of the biennial variety. There are also small acreages of corn for forage and of sun-flowers. All cultivated hay and forage crops constitute between 5 and 6 per cent of the total field crop acreage (1925) and if the wild hay acreage be added the combined total represents only 10 per cent of the aggregate. While hay and forage crops have increased with marked rapidity since the turn of the decade, they still remain comparatively less important than in the spring wheat region south of the international border. There, hay and forage crops constitute 20 per cent of the total crop acreage, a proportion twice greater than in the Canadian prairie region.

The limiting factor in the Canadian West is climate, particularly rainfall. Prairie hay is especially important in the sub-humid long grass portion of the region, i.e. in Manitoba, northern Saskatchewan and northern and western Alberta. In these districts considerable amounts of small grains are also cut for hay, but relatively greater dependence is placed on the small grains in the drier central and southern sections of Saskatchewan and Alberta, where the prairie grass is short and less abundant and the absence of adequate moisture prevents the successful raising of timothy, clover and alfalfa.

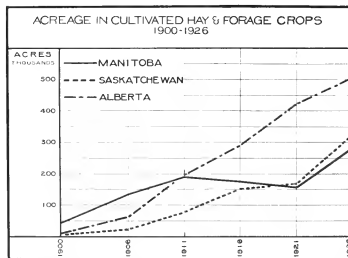


FIGURE 62.—Between 1921 and 1926 a decided increase occurred in the acreage of cultivated hay and forage crops, especially in Manitoba and Saskatchewan. Alberta still retains the greatest acreage.

Some brome grass and sweet clover are now being grown in central Saskatchewan and, as was noted above, the acreage of the latter is expanding rapidly. Climatic conditions confine the raising of timothy, clover and alfalfa to eastern Manitoba and southern and western Alberta.

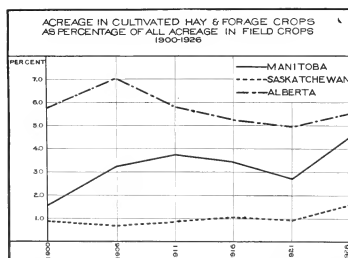


FIGURE 63.—Alberta devotes more of her crop land to hay and forage than any other western province; Saskatchewan the least. Since 1921 these crops have been gaining on the cereals.

The total value of hay and forage crops produced in the three Prairie Provinces in 1925 was in excess of \$34,000,000. In Alberta, these crops constituted 8.2 per cent of the value of all field crops; in Manitoba, 7.6; and in Saskatchewan, only 3.9 per cent. These figures give a fair idea of the relative importance of mixed farming and dairying in the several provinces.

# HAY AND FORAGE CROPS

FIGURE 64

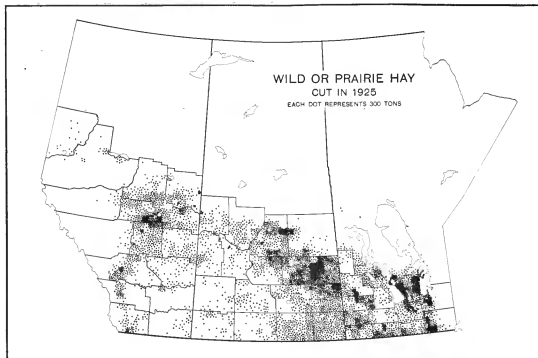
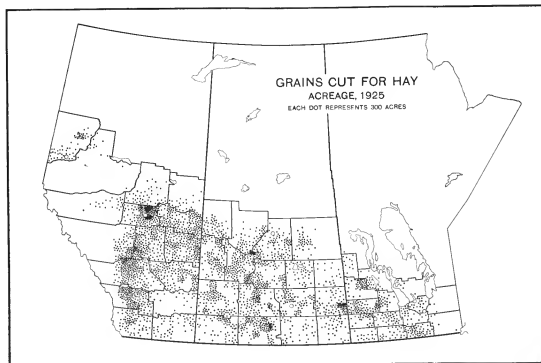


FIGURE 65



FIGURES 64, 65.—Wild hay constitutes about half the total acreage in hay and forage crops in western Canada. It is especially important in the sub-humid section where the yield is more abundant. Considerable, though fluctuating, amounts of grain are cut for hay. They are the chief sources of forage in the drier central portion of the region.

FIGURE 66

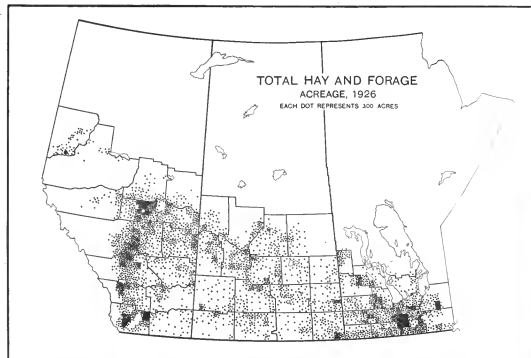
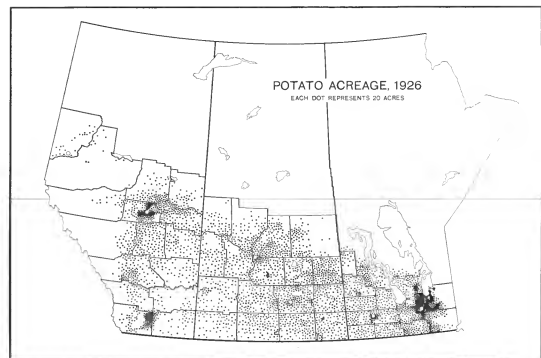


FIGURE 67



FIGURES 66, 67.—The cultivated hay and forage crops consist chiefly of perennial grasses, sweet clover and alfalfa and are largely confined to those western areas where precipitation is greatest although crops like brome grass and sweet clover do well in the semi-arid regions. While potatoes are grown generally throughout the West, marked concentration of acreage is confined to areas adjacent to the larger cities, and the irrigated zone of southwestern Alberta.

## FOREST PRODUCTS AND MARKET GARDENS

ALTHOUGH the estimated total stand of timber of merchantable size in the Prairie Provinces amounts to nearly 57,000 million cubic feet or 25 per cent of the estimated total for Canada, little or none of this timber is found in the southern portion of the provinces. The forests of the West lie to the north of a line drawn from Prince Albert to Athabasca Landing, a line which roughly coincides with the northern limit of existing agriculture. The spring wheat region is essentially a grass-land plain. Indeed the very absence of forest constitutes one of its great attractions for agricultural settlers. It should not be inferred, however, that there are no trees south of the great northern forest. Reference has been made to the sub-humid park or grove belt which separates the forest proper from the dry treeless portion of the prairies. The 1926 census shows approximately 6,500,000 acres of woodland on farms in the three provinces or 7.3 per cent of the total land area. The groves are composed almost entirely of aspen poplar with a scattering of white spruce and jack pine in

certain areas. Most of the trees range from 3 to 5 inches in diameter. Such lumber and timber as are required for building and other construction are imported from adjacent provinces or brought in from the North.

The value of forest products produced on farms in the region is consequently small. In 1925 the total was \$5,000,000, a sum smaller than the value of market garden produce. Firewood constituted nearly 90 per cent of the value of all forest products.

The farmers in the area depend on their farm gardens for vegetables and some fruits for table use. Melons and apples are grown in southern Manitoba and southwestern Alberta. Berries, tomatoes and a limited number of other small fruits, particularly plums, are common throughout the West. There is some specialization in market gardens in districts adjacent to urban centres. The total value of garden stuffs, however, is comparatively small, amounting to about \$7,000,000 in 1925.

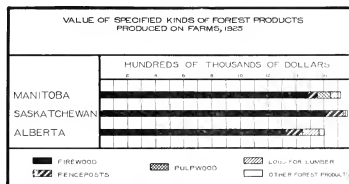


FIGURE 65.—Firewood is the chief forest product in the prairie region. A little pulp wood is cut by settlers in northern Manitoba and some logs for lumber in northern Alberta.

FIGURE 69

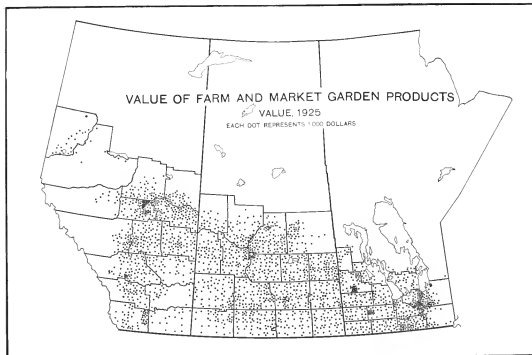
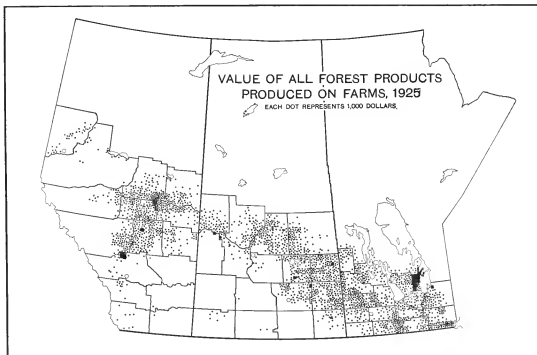


FIGURE 70



FIGURES 69, 70.—A limited quantity of forest products is produced in the park belt. Farm gardens are widely distributed throughout the region with notable concentrations in areas adjoining the larger urban centres.

WITH the coming of the white settler to the prairies, the buffalo was driven from his summer grazing ground and replaced by the cattle and horses of the early rancher, and the live stock of the homesteader. Despite the gradual curtailment of the open range, the numbers of all classes of farm animals have continued to increase since the beginning of the century with only occasional and temporary setbacks. This increase is associated with an enlarging area of settlement and a growing volume of fodder crops. The live stock of the region as a whole is deriving a larger proportion of its feed from cultivated land than was the case twenty-five years ago, and with the increased density of population and its expansion into the sub-humid park belt, there has been a gradual shifting from beef production to dairying.

Figure 71 shows the changes in the number of farms and in the purchasing power or deflated value of live stock, field crops and animal products by provinces for the census years 1901 to 1926. It will be seen that in spite of the increasing size of farms, the deflated value of the average farmer's live stock has been lower in all three provinces since the war than during the first decade and a half of the century. This situation is probably only a passing phase due mainly to a disproportionate deflation in live-stock prices. In Saskatchewan and Alberta the number of horses per farm continues to increase, though less rapidly, and the production of poultry and swine per farm is expanding in all three provinces. A temporary decline in the number of cattle in the region, however, occurred between 1921 and 1926 at which date the records indicate a decrease of nearly 400,000 head or 12 per cent. This was a period of relatively low beef prices which doubtless reacted on the raising of cattle for meat. Both the number of milch cows and their number per farm increased during these years.

The trend from beef production to dairying in the region as a whole is shown by the increasing proportions that milch cows constitute of all cattle. These figures are presented below for census years 1901 to 1926.

TABLE 14  
MILCH COWS AS A PERCENTAGE OF ALL CATTLE  
(Cows in milk and in calf)

Year	Manitoba	Saskatchewan	Alberta
1901.....	40.4	21.0	14.3
1906.....	32.6	23.8	10.7
1911.....	35.6	28.6	20.0
1916.....	33.9	32.2	20.2
1921.....	35.6	32.2	27.9
1926.....	40.4	37.8	34.5

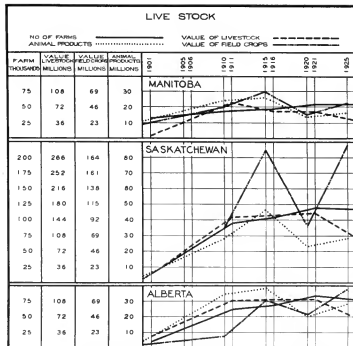


FIGURE 71.—The scales are so arranged that in each case the point of intersection with the curve for farms denotes the occurrence of the average value per farm obtaining in the prairie region for the period under review.

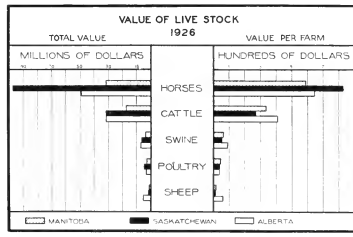


FIGURE 72.—In 1926, cattle outnumbered horses by 13 to 10 in Manitoba, by 18 to 10, but the aggregate value of horses was almost twice that of cattle. Swine greatly exceeded sheep both in number and value.

In Saskatchewan and Alberta where four-fifths of the cattle of the region are found, the proportion of milch cows has grown rapidly and practically continuously since 1901. In Manitoba, the proportion was higher in 1926 than at any of the previous four census dates. The proportion of milch cows is much higher in the moister sub-humid section of the region than in the dry belt. In Alberta, with its large area of dry range, only 30 per cent of the cattle were milked during 1925; in Saskatchewan with its relatively larger sub-humid region, 35 per cent; while Manitoba which falls almost entirely in the latter zone, showed 39 per cent. In 1926 there were over 1,100,000 cows on farms in the region, of which number approximately 70 per cent were milked.<sup>1</sup> Other cattle numbered in excess of 2,200,000. The sale and slaughter of live stock amounted to 831,000 beasts of all ages in 1925, of which number, 215,000 were slaughtered on the farm.

At the last census, the western farmers' investment in horses totalled \$180,000,000, a figure considerably greater than that for all other live stock combined. Cattle contributed \$80,000,000 to the total value of live stock, swine \$16,000,000, poultry \$9,000,000 and sheep nearly \$7,000,000. Alberta, with its large semi-arid grazing area and moderate climate raises more sheep than the other two provinces combined and the number and value of swine are also highest in that province. Saskatchewan leads in total poultry but their value per farm is greater in Manitoba. Both swine and poultry are now much more important than sheep in the prairie region. At the present time there are only about 800,000 sheep in the three provinces as compared with 1,600,000 hogs; yet in 1901, their numbers were about equal.

The prairie region has more horses per capita than any other part of Canada; indeed in Saskatchewan there are almost half again as many horses as people. The same obtains with cattle and poultry in the region as a whole, and with sheep in Alberta. Yet the numbers per 100 acres improved land are generally smaller, and in most cases very much smaller, than are found in the older and more intensively cultivated provinces like Ontario. With the increase of population there is every reason to expect continued expansion of the live-stock industry of the West.

<sup>1</sup> Computed on the basis of cows milked in 1925.

## LIVE STOCK

FIGURE 73

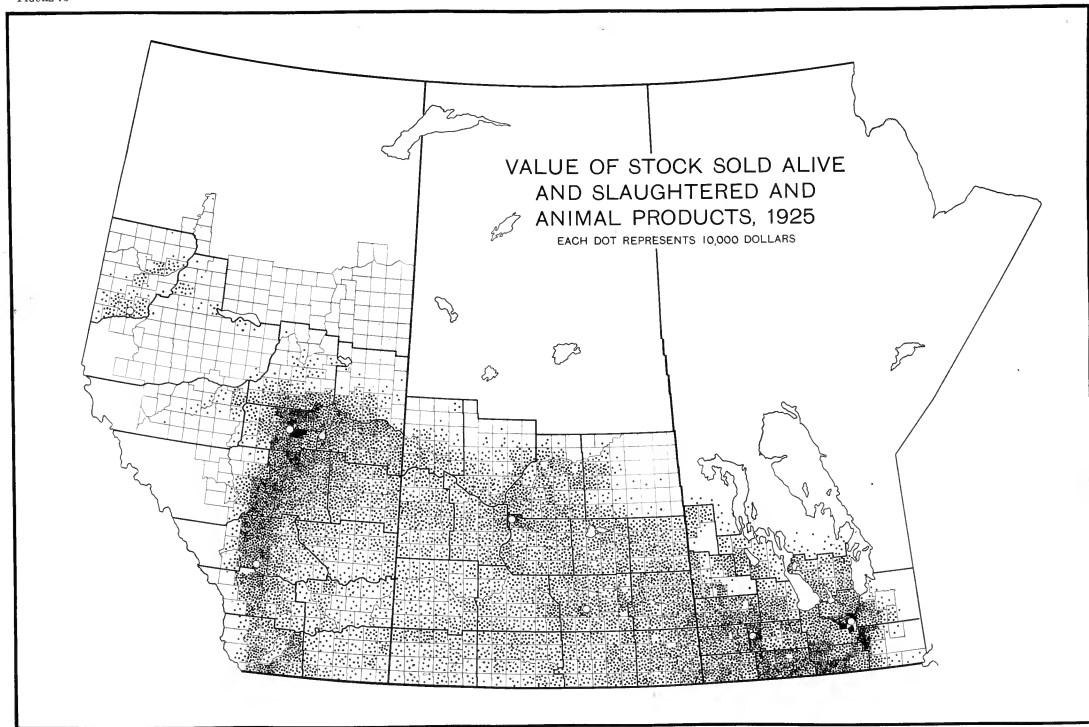


FIGURE 73.—When the value of all live stock sold alive and slaughtered and the value of animal products are mapped separately, the latter shows a little more concentration in areas adjacent to the larger cities than appears in the above figure. A similar map on the value of all live stock differs from those on revenue from the sale and slaughter of animals and the sale of animal products in that the density of the dots in Saskatchewan is relatively greater owing to the fact that a large proportion of the animals in Saskatchewan are horses used for work on the farm.

## HORSES AND MACHINERY

**H**ORSES are found on more farms in western Canada than is any other class of live stock. Nine out of every ten farms have one or more of these work animals; the average has 10. The horse is the most valuable as well as the *most universal of farm animals*, having long since superseded the ox of the early Red River settlement days as a source of power. In 1926, horses (including mules) numbered more than 2,280,000, about half the total being in Saskatchewan, a third in Alberta and the remainder in Manitoba. Approximately three-fifths of all horses in Canada are in the prairie region. Large farms and large acreages in field crops require many work animals.

The relation between work animals on the one hand and improved acreage in field crops on the other, has passed through three stages in the agricultural development of the West. During the period of early settlement both improved and cropped acreage grew more rapidly than the number of work animals. The farmer broke his land and put in his crops with his team of oxen or horses as the case may be. His initial stock of implements and draught animals was all he could handle or afford and few additions were made. This stage of development characterized Manitoba between 1881 and 1901 and Saskatchewan between 1901 and 1911. Then followed a period of consolidation when he supplemented his implements and machinery or replaced them with better ones, and raised or bought more horses. In this period horses increased faster than either improved acreage or field crops. Such was the situation between 1901 and 1916 in Manitoba and between 1911 and 1921 in Saskatchewan. The final stage came with the replacing of the horse by the tractor and other power-driven machinery. During this phase, both improved acreage and acreage in crops expanded more rapidly than the number of horses. The beginning of this last phase dates from about 1916 in Manitoba and 1921 in Saskatchewan and it is still under way. These stages are not easily discerned in Alberta because of the early prevalence of ranching.

Twenty-five years ago Alberta, or at least the section of the province then inhabited, was a country of ranches. At that time there were nearly 500 horses for every 1,000 acres in field crops, but with the passage of the years the homesteader encroached on the open range and settled up the other portions of the province with the result that the cultivation of land increased in relative importance, while ranching declined. Yet ranching is still an important industry in southern Alberta and in the foothill region, and is also very general in south-western Saskatchewan.

It is interesting to notice the peculiar age distribution of horses in the area and in particular, the recent decrease in the numbers of colts. Larger numbers of young animals are found in the West than in any of the eastern provinces. In 1921, approximately 15 per cent of all horses in the prairie region were under two years of age; in eastern Canada less than 10 per cent. The prevalence of ranching in certain districts is a proximate cause, but the underlying reason is the large local demand for work animals arising from the expansion of settle-

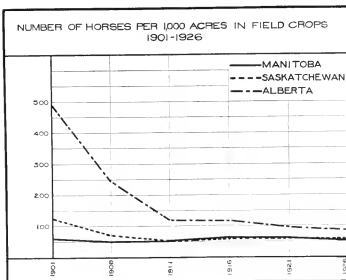


FIGURE 74.—In 1926 Alberta, with its relatively large ranching area, reported 88 horses of all ages (including mules) per 1,000 acres in field crops, as against 38 in Saskatchewan and 36 in Manitoba. The figures include animals of all ages.

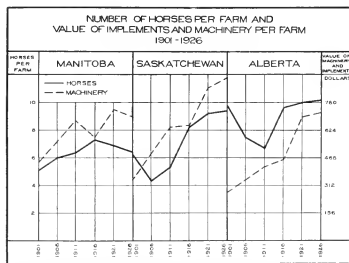
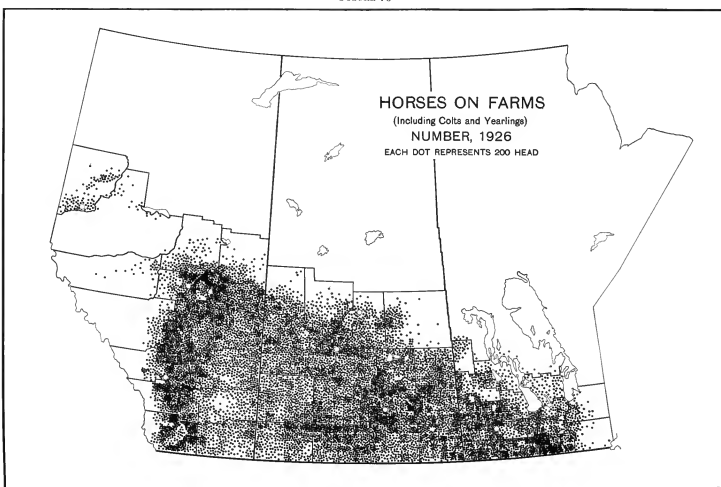


FIGURE 75.—In 1926, farm implements and machinery in the Prairie Provinces were valued at \$15,000,000 as compared with an \$180,000,000 investment in horses. Data on implements are not available for 1906. Values were deflated before plotting.

FIGURE 76



## HORSES AND MACHINERY

ment and the enlarging of crop acreage on farms already occupied. Of greater significance, however, is the recent decline in the raising of colts which, incidentally, has been accompanied by a marked falling off in the sale of horses. On June 1, 1921, there were 160,000 colts under a year old in the three Prairie Provinces; on the same date five years later the total was just over 105,000, a decrease of 33 per cent. In the year 1910 nearly 125,000 horses were sold in western Canada; since the war, the annual sale has fallen below 60,000. As has been suggested, the decreased production of work animals is associated with a slackening in the speed of settlement and an increasing use of the tractor; both of which have contributed to the drastic decline in the prices of this class of live stock. The effect on the number of pure bred stock is particularly noticeable.

As has already been pointed out, the relation between horses and farm implements and machinery has undergone a significant change during the last quarter of a century. So long as the horse was the only source of power, the increasing use of better and larger implements involved additions to the work animals on the farm. The tractor and automobile, however, completely reversed the situation. These mechanical devices entered into direct competition with the horse. They were able to do his work more efficiently and at a lower cost;

at the same time, they required less attention and released a certain amount of crop land, previously devoted to horse feed, for the production of a money crop or the support of other revenue-producing live stock.

In 1926, Manitoba showed the largest number of tractors per 1,000 acres occupied, improved, and in field crops.

TABLE 15  
NUMBER OF TRACTORS, 1926

Province	Per 1,000 acres occupied	Per 1,000 acres improved	Per 1,000 acres in field crops
Manitoba.....	0.8	1.5	1.9
Saskatchewan.....	0.4	1.0	1.4
Alberta.....	0.4	0.9	1.2

The explanation seems to lie in a more advanced stage of agricultural settlement. In this connection it is significant that in recent years the use of the tractor has been growing much more rapidly in the two western provinces. Between 1921 and 1926 the number in Saskatchewan increased 39 per cent and in Alberta 23 per cent as against 21 per cent in Manitoba, and the trend has been accentuated since 1926.

The same applies to the combine. The large scale grain farming of the middle and western portion of the prairie region benefits most from these costly labour-saving devices. In 1926, 24,000 of the 45,000 farms reporting tractors in the three provinces were in Saskatchewan, 11,000 in Manitoba and 10,000 in Alberta. Since that date the percentage of farms with tractors has grown by leaps and bounds, especially in Saskatchewan and Alberta. In 1928, more tractors were sold in the West than in the first five years of the decade. The first combine in the Prairie Provinces went to the Swift Current district in 1922. Estimated sales in the West rose from 176 in 1926 to 578 in 1927, 3,657 in 1928 and 3,295 in 1929, and if these machines are found to fulfil expectations at present entertained and prove suited to existing topography and climatic conditions, their number will undoubtedly increase many fold. Automobile registrations have been keeping pace in these western agricultural provinces, the number of motor cars and trucks per 100 population being now about equal to that in Ontario. This mechanization of farming operations not only curtails the use of horses and enlarges the size of farm units, but tends to reduce farm labour requirements. If it continues, important readjustments in the agricultural economy of the West as well as in its population distribution seem inevitable.

FIGURE 77

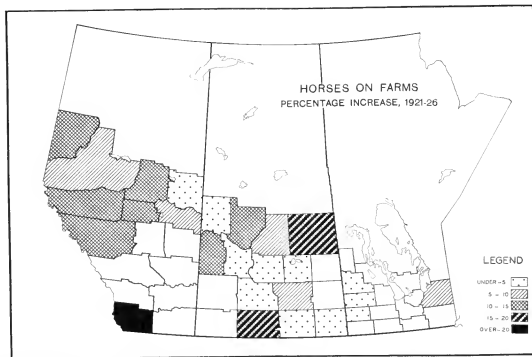
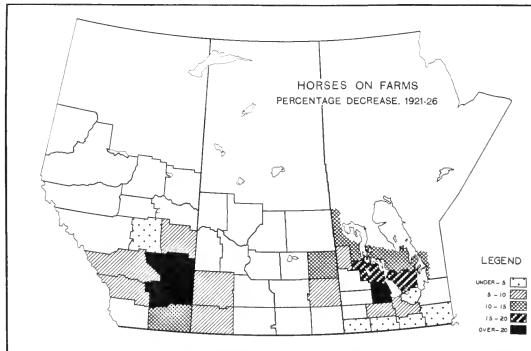


FIGURE 78



FIGURES 77, 78.—Horses are more uniformly distributed over the prairie region than is any other type of live stock. Significant decreases occurred between 1921 and 1926 in northern Manitoba and southern Alberta where much land was abandoned during the period. The decreases in southern Manitoba are probably associated with the increased use of the tractor and those in the ranching area with the general slackening of the demand for work animals. The fact that in 1926 field crop acreage in the region exceeded that in 1921 by nearly 2,800,000 acres explains most of the increases shown in Figure 77.



THE cattle industry of the West dates back to the founding of the Red River settlements in 1812. In 1822 all classes of live stock including cattle totalled about 200 and the following year a shipment of 300 cattle was sent in from the south for distribution among the settlers. During the next fifty years progress was slow but between 1875 and 1900 settlement expanded rapidly and cattle raising kept pace. It was in this period that the completion of the first trans-continental railway opened eastern markets to the ranchers who appeared in southern Saskatchewan and Alberta and in the foothills on the western fringe of the prairies. Dairying soon developed in Manitoba and the sub-humid sections of the other two provinces where more plentiful moisture made for abundant hay and superior pasture. With the turning of the century came a growing commercialization of the dairy as well as of the meat industry, a process which has continued to the present day. Dairying has grown more rapidly than beef production, especially since the war. Dairy cows require much less feed to produce an equivalent amount of human food than do beef cattle and only a fraction of the crop land. The growth of dairying, therefore, like the change from mutton to pork production, to which reference will be made below, is one phase of the transition toward the more economical use of land, and a natural consequence of the growing density of population. Increased population means expanding local markets and a more abundant labour supply.

Beef production is still an important industry, however—a fact which is reflected in the high ratio between cattle and population. There are about 1,700 head of cattle per 1,000 people in the region as a whole (and nearly 2,400 in Alberta), as compared with only 900 in Ontario and less than 700 in Quebec. (Fig. 79.) Cattle other than cows in milk and in calf numbered almost 1,900,000 on June 1, 1926, and the value of cattle sold and slaughtered in the previous year was over a third greater than that of milk produced.

Nevertheless, as was stated above, dairying is becoming more important while beef production is falling off. The first five years of the present decade witnessed an increase of 146,000, or 23 per cent, in the number of cows milked on farms and at the same time a decline of 560,000, or nearly 30 per cent, in the number of other cattle in the area. Milk production per head of population has grown steadily from 1,320 pounds in 1910 to 1,640 pounds in 1926, with only occasional setbacks in dry years like 1920 when pasture was

poor and fodder crops scarce. In 1926 nearly 80 per cent of all farms reported cows in milk or in calf, the average number per farm reporting being 6. Since the beginning of the century milk production per farm has also increased in every province, the average farm in the region now producing more than twice as much as in 1900. (Fig. 81.) The size of farms, of course, has become larger, especially in Saskatchewan and Alberta, but only by about a third as compared with a doubling in milk output.

Manitoba, because of earlier settlement, relatively larger proportions of agricultural land in the sub-humid park belt and a large local urban market, leads in milk production per farm, per acre improved, and per acre in field crops. In that province, the value of milk produced equals that of all animals sold, and slaughtered on farms. In Saskatchewan, it is only about three-quarters as great and in Alberta approximately half. Moreover, more of the cows are used for dairy purposes in Manitoba. As many as 78 per cent of the cows in milk or calf are milked, as against 71 per cent in Saskatchewan. In Alberta where many beef cattle are raised, only 61 per cent of the cows are dairy animals.

Nearly 28,000 farms in the prairie region reported pure-bred cattle in 1926. There are now between 90,000 and 100,000 pure-bred cattle in the West, and their number has been increasing.

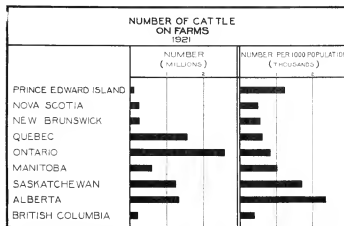


FIGURE 79.—In 1921, the Prairie Provinces contained 43 per cent of all cattle in the Dominion and less than 23 per cent of the population.

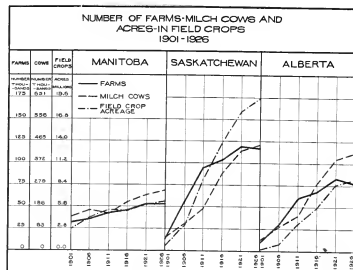


FIGURE 80.—In this chart, milch cows include all cows in milk and in calf. Dairying is relatively more important in Manitoba and Alberta; field crops in Saskatchewan.

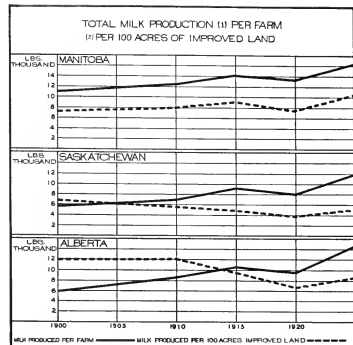


FIGURE 81.—The figure for milk production in 1920 was estimated and that for 1910 includes a certain amount produced elsewhere than on farms.

## CATTLE AND DAIRY PRODUCTS

FIGURE 82

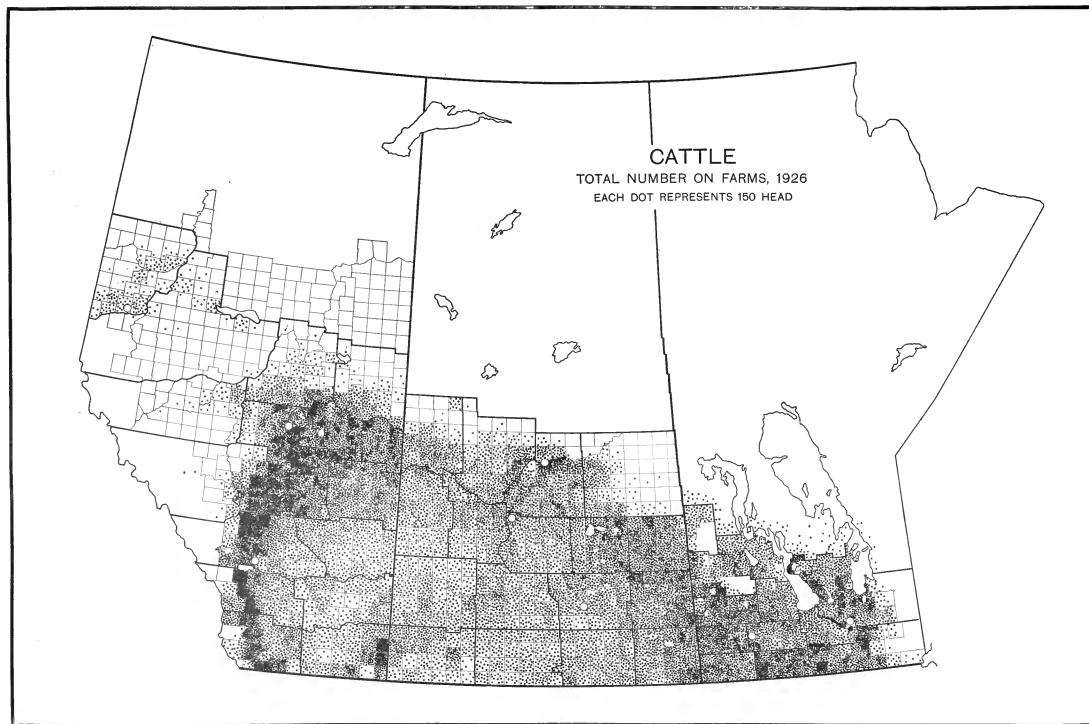


FIGURE 82.—The greatest concentrations of cattle occur in the sub-humid park regions of Manitoba, northeastern Saskatchewan and northern and western Alberta. They are also found in large numbers in the dry ranching district straddling the southern portion of the boundary between Saskatchewan and Alberta. In 1926, there were over 3,000,000 cattle in the Prairie Provinces as compared with 2,300,000 horses and 1,600,000 swine. Larger proportions of the farmers in Manitoba and Alberta have pure-bred cattle than elsewhere in Canada, Ontario excepted.

FIGURE 83

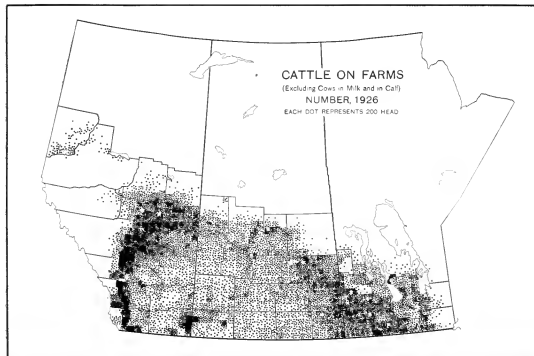


FIGURE 85

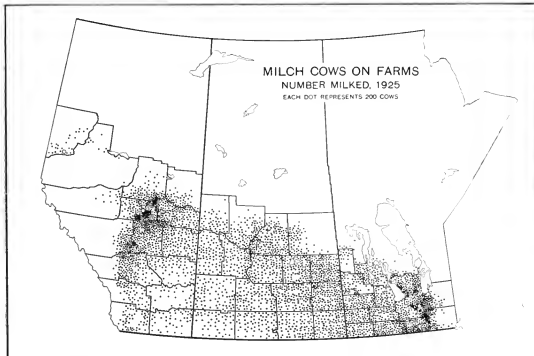


FIGURE 84

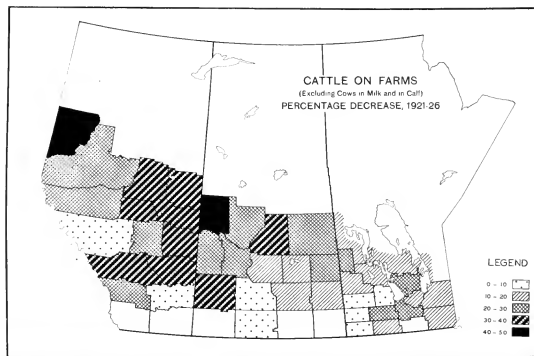
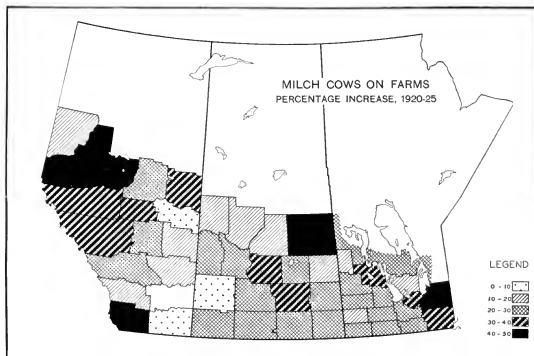


FIGURE 86



FIGURES 83-86.—In 1921 the prairie region contained over 49 per cent of all beef cattle (excluding calves) in the Dominion, and less than 24 per cent of all cows milked (1920). Between 1920 and 1925, the number of cows milked on farms increased in all parts of the West except in the evacuated area in southeastern Alberta. Of special interest is the 30-40 per cent. increase in the Regina-Saskatoon district. Other cattle on farms declined during the same period in all but six census divisions skirting the international boundary.

## MILK AND BUTTER

## MILK

THE frequent shortages of moisture obtaining over large sections of the prairie region make for appreciably greater fluctuations in the annual output of milk than occur in other parts of Canada where good pasture and abundant hay and forage crops are seldom lacking. Nevertheless, milk production fluctuates much less violently than cereal crops and while its growth has been slower it is a dependable source of income. In 1925, the total production in the prairie region amounted to three and a half billion pounds to which total Saskatchewan contributed approximately two-fifths, Alberta a third, and Manitoba a quarter.

The annual value of milk in its unmanufactured state amounts to about \$40,000,000 for the three provinces, a sum equal to the value of all live stock sold, and two and a half times larger than that of stock slaughtered on farms. In Manitoba, where dairying has become more general than in the other provinces, the yearly output of milk is now worth fully as much as stock sold and slaughtered combined. The value of milk produced per farm (all farms) exceeds \$150 annually, in the region as a whole, and in the dairy sections is very much higher.

Much of the milk is consumed locally on the farm, a fact which is readily understood when one is reminded that over 60 per cent of the population of the three provinces lives in rural parts. Only about 4½ per cent is sold as milk to supply the urban market. Sale of cream, however, is considerable, part of which finds its way to the consumer in that form and part as creamery butter. Very little milk is made into cheese in the prairie region. Of the portion consumed on the farm much is converted into butter, the skim-milk and whey being fed to stock.

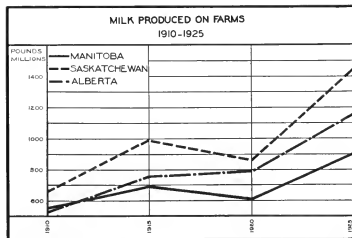


FIGURE 87.—In the fifteen year period 1910-1925, total milk production in Manitoba increased 66 per cent and in Saskatchewan and Alberta, approximately 120 per cent.

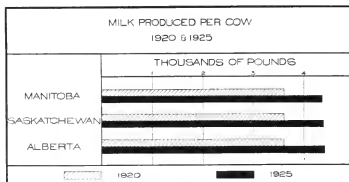


FIGURE 88.—This chart is based on the number of cows milked on farms and milk production on farms. Milk production in 1920 was abnormally low on account of drought.

## BUTTER AND CHEESE

BUTTER production in the prairie region totalled almost 90,000,000 pounds in 1925 as against 65,000,000 in 1915, and 12,000,000 in 1900. These figures indicate a 40 per cent increase in butter output during the decade 1915 to 1925 and a seven and a half fold expansion in the first quarter of the century. Figure 89 graphically illustrates the trend from farm to factory production to which attention has already been called. In 1915, only 25 per cent of the butter produced in the West was made in factories; by 1925, the proportion had increased to 55 per cent. Indeed, in Manitoba, where settlement has expanded slowly as compared with the two western provinces, a definite downward trend in the absolute quantities of butter made on farms has been in evidence since 1915; at the same time, factory production has more than doubled. At the beginning of the century, there were 92 creameries in the three Prairie Provinces, 69 or three-quarters of which were in Manitoba; in 1927, the total was 267, of which number 196 or almost three-quarters were in Alberta and Saskatchewan. Yet Manitoba still leads in butter production per farm, per acre improved and per acre in field crops. Though the farms are much smaller in that province, total butter production (creamery and dairy) worked out to 440 pounds per farm in 1925 as compared with 385 in Alberta and 300 in Saskatchewan. Approximately 75 per cent of the butter made on farms is for home consumption.

As compared with butter, cheese production in western Canada is very small. In 1925, the total output was about 3,000,000 pounds, 90 per cent of which was factory made. Moreover, like butter, its production was expanding rapidly up to 1926 when the upward trend was interrupted. The province of Alberta now produces over half the cheese in the region and in that province production has increased greatly in recent years.

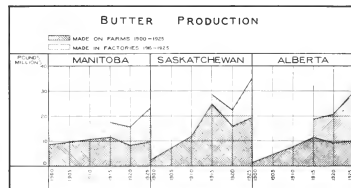


FIGURE 89.—The manufacture of butter and cheese is still being transferred from the farms to the factory. Already considerably more than half the butter in the Prairie Provinces is factory made.

FIGURE 90

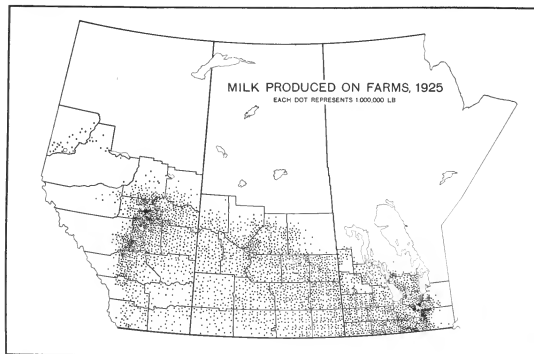


FIGURE 91

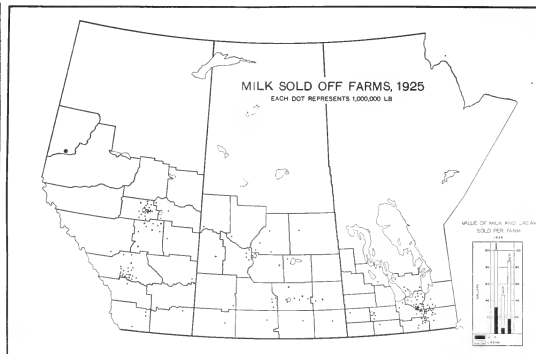


FIGURE 92

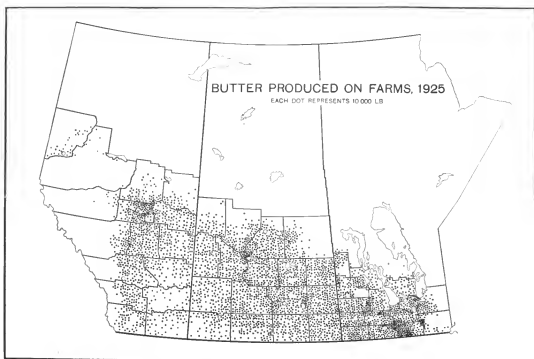
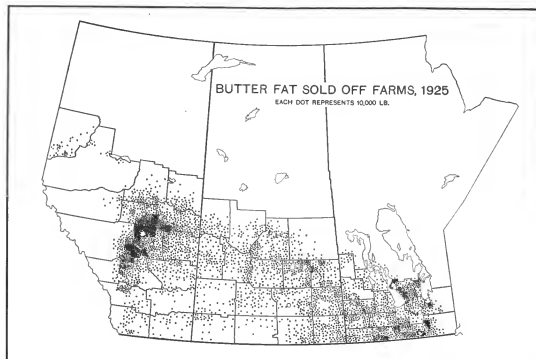


FIGURE 93



FIGURES 90-93.—Less than 5 per cent of the milk produced on farms is sold as milk, most of that going to adjacent city markets. The map on butter fat sold off farms more adequately reflects the degree of specialization in dairy farming than does either that on total milk production or butter made on farms. The more even distribution of dots in the last mentioned maps is attributable to the general farm practice of producing milk and butter for domestic consumption. The two most important dairying areas of the West are in eastern Manitoba and northwestern Alberta. (Compare with Figure 24 on Types of Farming.)

## SHEEP AND SWINE

IN Saskatchewan one farmer in thirty raises sheep; in Alberta, one in seventeen; in Manitoba, one in fifteen. In the ranching districts of Alberta sheep are raised in large flocks, the average farm reporting sheep having over 110 and some many times that number. In Saskatchewan and Manitoba, on the other hand, sheep raising is a subsidiary part of the farm economy and the average flock numbers less than 40. Sheep are especially useful in keeping down weeds and in some sections of these provinces were introduced for that purpose with excellent results.

The high prices of wool and mutton during the war served to stimulate the production of sheep in the prairie region. During the first five years of the last decade their number continued to increase in the province of Alberta, but this was offset by declining numbers elsewhere, particularly in Saskatchewan, so that, on balance, the total in the West remained almost stationary. An interesting change has occurred in the number of farms reporting sheep.

TABLE 16  
NUMBER OF FARMS REPORTING SHEEP

Province	1916	1921	1926
Manitoba.....	3,830	6,984	3,486
Saskatchewan.....	4,789	4,128	3,861
Alberta.....	3,129	4,130	4,524

In Manitoba, the number nearly doubled between 1916 and 1921, but by 1926 had decreased again to below the 1916 figure. Many farmers who took up sheep raising when prices were at wartime levels found that the successful raising of this type of stock required a degree of specialized knowledge and an amount of attention, especially during the lambing season, beyond their expectations; and when prices dropped they went out of sheep raising as quickly as they had gone into it. In Manitoba and Saskatchewan, the cold and often stormy weather in the early spring will always militate against a wide distribution of this class of live stock; but the climate of western and southern Alberta is more favourable and the number of farmers reporting sheep has been growing steadily. At the last Dominion census the three Prairie Provinces reported over 60 per cent of the horses in the Dominion and 40 per cent of the cattle, but only 23 per cent of the sheep.

In 1926, there were about 25,000 pure-bred sheep in the Prairie Provinces and as in the case of cattle, these pure-bred animals are on the increase. While Alberta shows the smallest proportion they are much more widely distributed among the sheep-raisers, suggesting a more general effort to raise the grade of this class of stock.

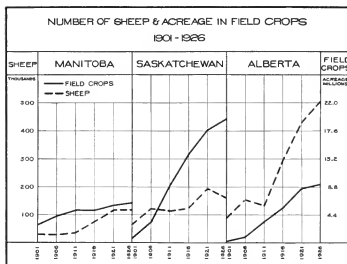


FIGURE 94.—Since 1911, the number of sheep has expanded more rapidly than field crop acreage in Alberta and Manitoba, but much less rapidly in Saskatchewan.

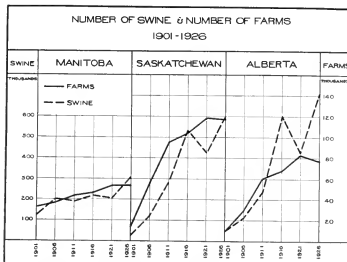


FIGURE 95.—The number of swine per farm, per acre improved and per acre in field crops is greater in Alberta than elsewhere in the West.

At the last census of the Prairie Provinces swine out-numbered sheep by more than two to one. In 1925, the annual sale and slaughter of swine amounted to about 1,200,000, a figure nearly seven times greater than that for sheep (175,000). Cattle still outnumber swine by 2 to 1 but already nearly 50 per cent more hogs than cattle are sold and slaughtered each year. Of all farm animals so far discussed, swine have increased most rapidly on western farms. In 1901, there were 17 hogs for every 100 cattle in the region; in 1926, more than 50. In the same period the ratio between swine and horses rose from 59 : 100 to 72 : 100, and that between swine and sheep from 111 : 100 to 200 : 100. The obvious explanation is that in most sections of the West the raising of hogs pays better than either cattle or sheep, a fact which cannot be dissociated from the greater amount of meat produced by hogs from a given quantity of feed. The increase in pork production has gone hand in hand with the growth of dairy products to which reference has already been made, and from the standpoint of land utilization, signifies a distinct trend towards the more economical employment of that basic natural resource. This shift from beef and mutton production to swine and dairying is but a local phase of a general change which is taking place all over the continent. In western Canada it has come more rapidly than might be expected from the relation between land and population, because of the large central and eastern European immigration of the past decade and a half. These immigrants go in for hog raising much more generally than do native Canadian farmers or than settlers from the United States or the British Isles (see page 85).

Taking the region as a whole, about three-quarters of the annual supply of hogs is sold, the balance being slaughtered on the farms and consumed locally. Yet the proportions differ considerably in the three provinces. In Alberta six hogs are sold to every one slaughtered on the farm; in Manitoba, two and a half; and in Saskatchewan, one and a half. As in the case of sheep, Alberta sells more hogs than the other two provinces combined and at the same time slaughters almost as many on the farm per 100 rural population as Saskatchewan and more than Manitoba.

Up to 1921, the proportion of pure-bred swine increased steadily in all three provinces. The upward trend continued during the next five years in Saskatchewan but was interrupted both in Manitoba and Alberta. Sixty-five per cent of the pure-bred swine of the West are Yorkshires and their number is increasing rapidly.

FIGURE 96

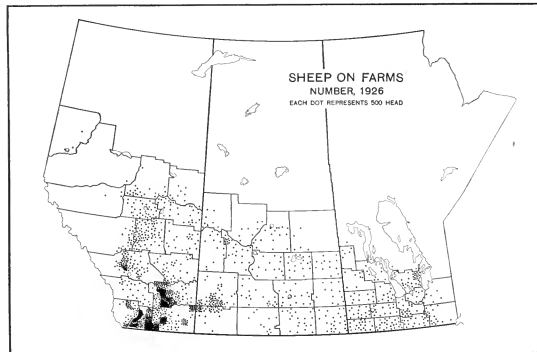


FIGURE 97

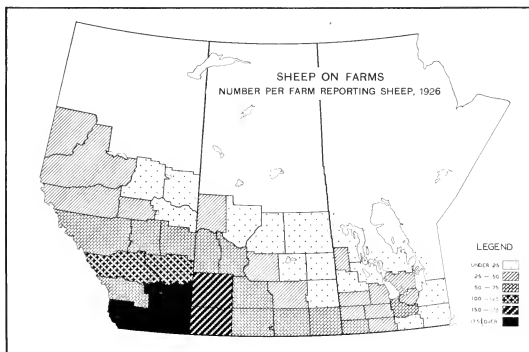


FIGURE 98

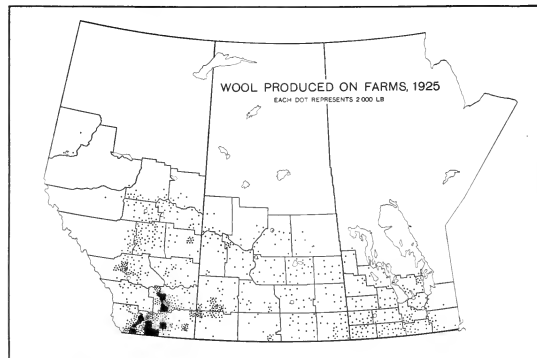
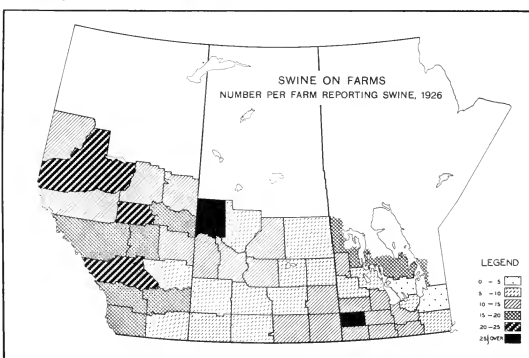


FIGURE 99



FIGURES 96-99.—In 1926, there were about 800,000 sheep in the Prairie Provinces, two-thirds of which were in Alberta, principally in the dry ranching areas of the south and in the foothill region of the West. The balance was divided between Manitoba and Saskatchewan in the ratio of 2 to 3. Sheep are found on less than 5 per cent of the farms in the region as a whole; swine on over 50 per cent. The wool crop of 1925 totalled almost 2,750,000 pounds and contributed \$661,000 to farm income in the West. Note difference in legends.

## SHEEP AND SWINE

FIGURE 100

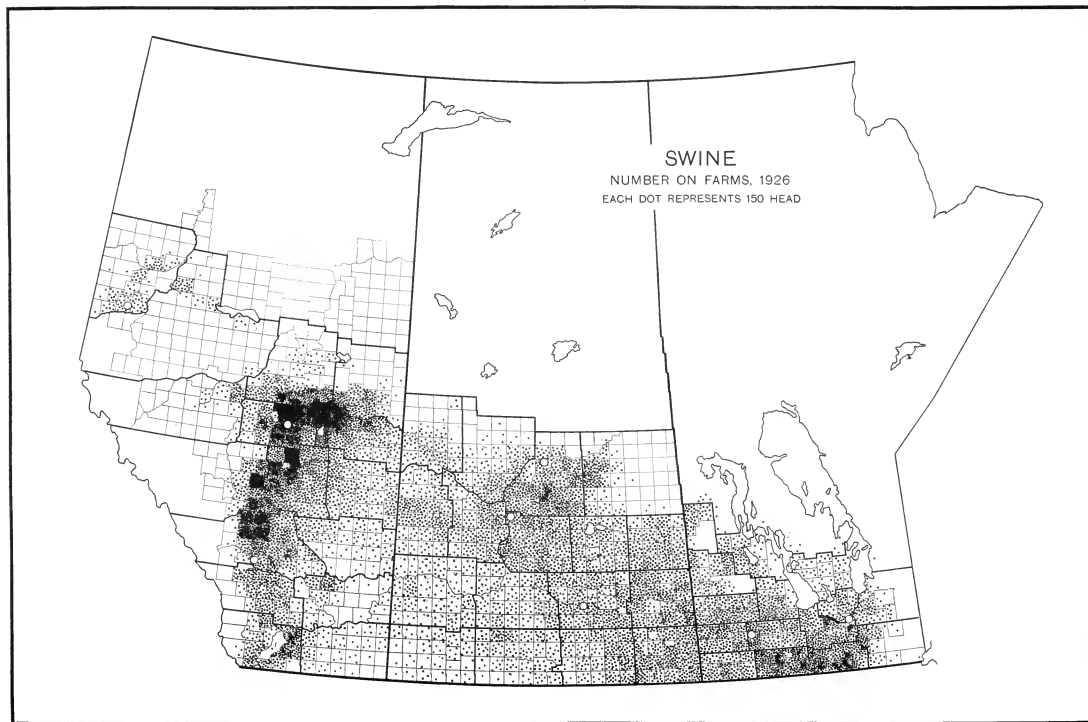


FIGURE 100.—In 1926, 44 per cent of the swine in the prairie region were in Alberta, 37 per cent in Saskatchewan and 19 per cent in Manitoba. Although this class of live stock is distributed very generally over the three provinces (except in the arid parts), a marked concentration occurs in the park region of northern and western Alberta. The district adjacent to Edmonton, including a narrow strip of country running south to Calgary, raises half again as many swine as the province of Manitoba. Pork packing is an important industry in Alberta.



EIGHT out of ten farms in the region have poultry of some kind and the income derived therefrom is about \$70 per farm reporting poultry. The sale and slaughter of birds yielded \$5,000,000 in 1925, and the eggs produced were valued at \$12,000,000, over twice the value of the meat. Three-quarters of the poultry are consumed locally though by no means all on the farm. The practice of dressing poultry on the farm for sale in adjacent urban markets is very general over the region, and the farmer and his family consume much smaller numbers than might be supposed from the domestic slaughter. Nearly 60 per cent of the eggs are used on the farm, however, though the proportions differ somewhat as between the provinces.

Since 1901, the number of chickens per farm (all farms) has increased over two and a half fold in Manitoba, three fold in Alberta, and three and a half fold in Saskatchewan. Egg production per farm has not risen quite so rapidly as the number of chickens in Manitoba or Alberta suggesting a disproportionate growth in the market for dressed poultry in these provinces where relatively large proportions of the population are urban. In the West as a whole, the annual egg production per head of population (total population) increased from 17

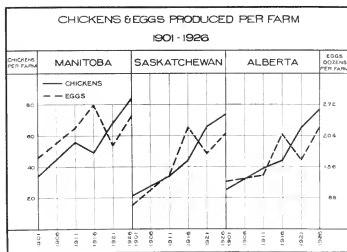


FIGURE 101.—The data on chickens and eggs used in this chart are provincial totals, and include a certain percentage produced in urban parts. The statistics on eggs are for the years preceding the census.

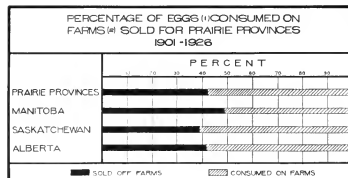


FIGURE 102.—In Manitoba where the urban population is relatively large, the farmers sell 49 per cent of the eggs produced, in Saskatchewan only 30 per cent.

to 25 dozen or approximately 50 per cent during the first quarter of the century.

The quantities of honey and wax produced on farms in the region totalled 1,150,000 pounds in 1925 with a value of approximately \$200,000.

FIGURE 103

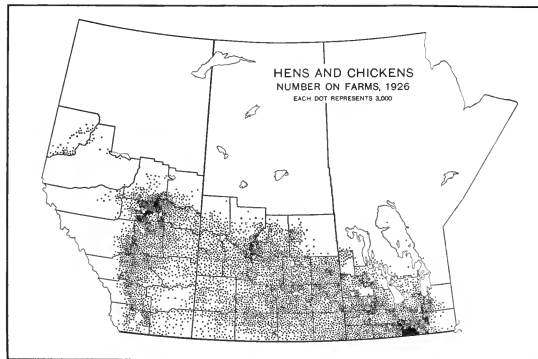
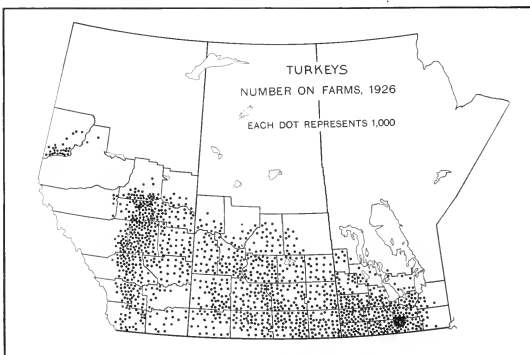


FIGURE 104

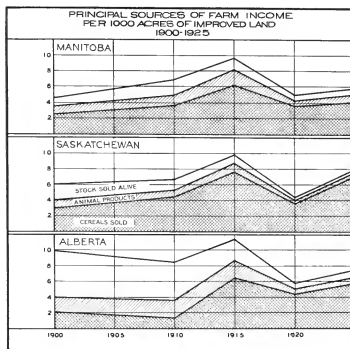


FIGURES 103, 104.—Western Canada raises over 35 per cent of the poultry of the Dominion. In 1926, all classes of birds totalled about 21,000,000 with an aggregate value of \$9,000,000. The majority were hens and chickens (90 per cent). Turkeys numbered nearly 1,500,000, and ducks and geese approximately 250,000 each. (Note differences in scales used in accompanying maps.) Manitoba leads in chicken and egg production per farm. Four-fifths of the honey and wax production is in that province, but in recent years bee keeping is becoming increasingly popular in both Saskatchewan and Alberta.

FARM INCOME<sup>1</sup>

At the opening of the century, Manitoba's farm income was double the combined total for the district now included in the two western provinces. In 1925, the income of Alberta alone, was twice that for Manitoba and Saskatchewan's was nearly five times greater. While development has been rapid in Manitoba it has been little short of phenomenal in the other two provinces. By 1910, Saskatchewan had taken the lead as a cereal producer. To-day, Saskatchewan's income from this source is about twice that for Manitoba and Alberta combined. In the case of animal products, however, Saskatchewan has failed to outdistance the other provinces to anything like the same extent and is still far behind Alberta in gross income derived from the sale of farm animals. Alberta sells almost as much live stock as Manitoba and Saskatchewan together. The income from the sale of live stock in the western provinces is distributed roughly as follows: 65 per cent from cattle, 25 per cent from swine, 5 per cent from horses, and the balance, or about 5 per cent, from sheep and poultry combined.

In the process of years, significant changes have occurred in all provinces in the proportions of farm income derived from the different kinds of farm enterprises, and a study of these changes is essential to an adequate understanding of the economic history of a pioneer agricultural region like western Canada. A quarter of a century ago Alberta obtained 54 per cent of her farm income from the sale of live



(The vertical scale is in thousands of dollars.)

FIGURE 106.—This chart draws attention to the drastic post-war deflation in farm prices, the marked emphasis on cereal production in Saskatchewan and the transition from ranching to crop cultivation in Alberta. The data were deflated by means of the general wholesale price index (1913=100).

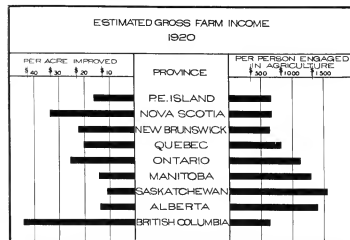


FIGURE 107.—In estimating the aggregate farm incomes, allowance was made for feed consumed by live stock. Much of this was converted into animals sold and slaughtered and animal products and was deducted to avoid duplication.

stock, another 7 per cent from animals slaughtered on the farm, and approximately 19 per cent from animal products, or a total of almost 80 per cent directly or indirectly from live stock. The balance, or about 20 per cent, came from the sale of cereals. In 1925, cereals contributed 75 per cent of her agricultural revenue and farm animals only a quarter—a direct reversal of the situation existing in 1900. Similar though less

extreme changes occurred in the other provinces. At the beginning of the century, over half of the farm income of Saskatchewan came by way of live stock; to-day less than 12 per cent, and in Manitoba the proportion dropped from 47 to 30 per cent.

In the early years of the century, live stock obviously played a much more important role in the farm economy of the West than it does to-day, a fact which finds interesting confirmation in the analysis of farm values on page 68. The explanation is not difficult. Land was cheap, and abundant pasture was available with little or no cost of money or time and was easily marketed in the form of farm animals. Live stock, therefore, provided an immediate source of revenue as well as an essential part of the food consumed by the farmer and his family. In Alberta and Saskatchewan, a marked change has occurred in the relative importance of the prevailing systems of farming. This fact should be kept in mind when perusing Figs. 105 and 106.

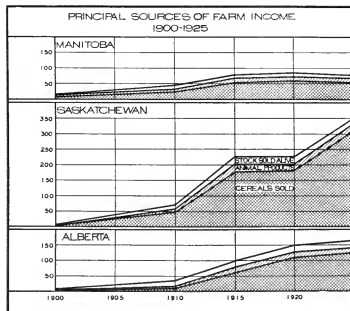
The proportion of farm income derived from animal products is of course greater in Manitoba than elsewhere in the West. In 1925, it amounted to 17.0 per cent of the total, as compared with 10.5 per cent in Alberta and only 5.9 per cent in Saskatchewan. Yet even in Manitoba, the value of animal products per 100 improved acres is only a fraction of that in the more densely populated eastern provinces, and for reasons readily understood. (Table 17.) The farmers of western Canada have emphasized those phases of agriculture in which they had the greatest comparative advantage.

TABLE 17

VALUE OF FARM PRODUCTS PER 100 ACRES IMPROVED LAND, BY PROVINCES, 1920

Province	Animal products	Stock slaughtered	Stock sold alive
	\$	\$	\$
Prince Edward Island.....	624	204	208
Nova Scotia.....	1,394	329	267
New Brunswick.....	722	231	142
Quebec.....	846	216	195
Ontario.....	960	129	600
Manitoba.....	173	56	115
Saskatchewan.....	94	35	39
Alberta.....	158	40	145
British Columbia.....	1,513	319	549

Farming operations in the sparsely settled West yield low returns per acre but high returns per person employed in agriculture. This is the normal situation in pioneer agricultural regions where land is cheap and capital and labour relatively scarce, and in western Canada is specifically associated with large scale machine production in the grain growing districts, large acreage of natural pasture in the ranching areas and recentness of settlement in the sub-humid parts where dairying and mixed farming are still carried on less intensively than in the older provinces of the East. (See Fig. 107.)



(The vertical scale is in millions of dollars.)

FIGURE 108.—The gross dollar income from the principal sources of farm revenue has grown rapidly with the advance of settlement and rising price trends. The value of cereals sold was estimated for 1900. No data on farm income are available for 1905.

<sup>1</sup> Includes gross receipts from cereals and stock sold, value of live stock slaughtered on farms and value of animal products.

# FARM INCOME

59

FIGURE 108

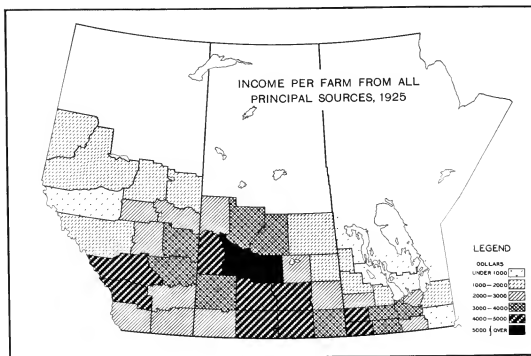


FIGURE 109

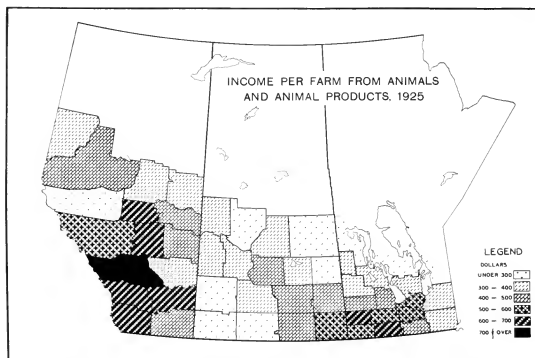
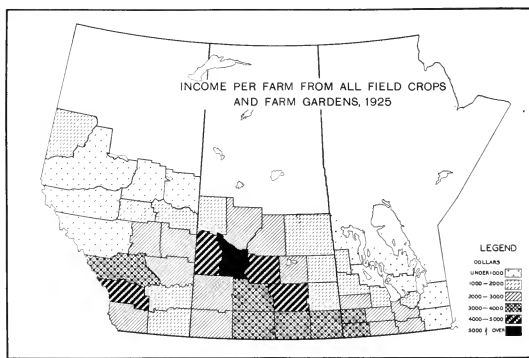


FIGURE 110



FIGURES 108-110.—The same legend was used for the maps on income per farm from all principal sources, and from all field crops and market gardens. These maps are consequently comparable both as a whole and by census divisions. A different legend was chosen for Figure 110 because farm income from animals and animal products constituted less than 20 per cent of the aggregate income from all principal sources and the effective presentation of the data necessitated a scale of shadings on the whole several times darker than was warranted by the relative importance of animals and animal products in the farm economy of the West. All three maps should be studied in conjunction with that on size of farms.

## FARM INCOME

FIGURE 111

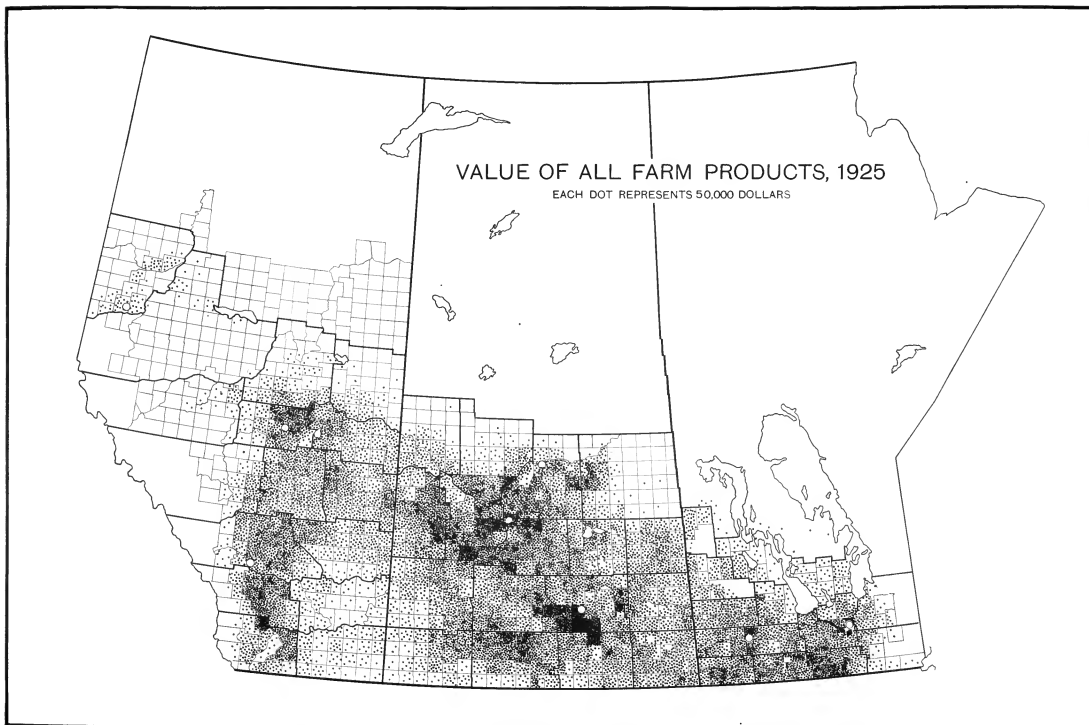


FIGURE 111.—In 1925, the combined farm income from stock sold alive and slaughtered, animal products and cereals sold off farms in the Prairie Provinces amounted to \$584,000,000. In 1900, the aforementioned items totalled only \$26,000,000. When allowance is made for rising prices, the gross income from these four major sources is found to have multiplied over twelve fold in the twenty-five year period. The similarity between this map and that for wheat acreage (Figure 45), emphasizes the dominant position of that cereal among the sources of farm income in the West.

THE Canadian prairie is a region of large farms. In 1926, the average farm holding included well over a half section, or, to be exact, 369 acres, which is three to four times greater than in other parts of the Dominion. (Fig. 113.) Manitoba is the one western province where farms in general have not been growing larger, a circumstance attributable not so much to an absence of forces making for larger scale operations, as to the relatively greater proportion of the occupied acreage falling within the "park" belt with its peculiar adaptability to mixed farming. Probably also the fact of early settlement has made for stability, and to this should be added the presence of a relatively large adjacent urban market and possibly the influence of a more or less continuous influx of settlers from central Europe.

The trend towards larger farms is reflected in the increasing acreage in field crops. In Saskatchewan and Alberta, the acreage per farm in crops has increased continuously up to the present time and since the war a similar change has taken place in Manitoba. How much larger farms will become and how long the transition will continue is of course a matter of speculation. Of interest in this connection is the fact that in the semi-arid section of the wheat growing states south of the border the crop acreage per farm is about 15 per cent greater than in the semi-arid portion on the Canadian side, and in the sub-humid section it is approximately double.<sup>1</sup>

The crop acreage per farm in the semi-arid portion of the Canadian West is materially greater than in the sub-humid (Fig. 118), and for reasons readily understood. The land being drier, yields per acre are lower and the risks of serious drought through drought are greater. The securing of a given income over a period thus requires a larger acreage in crop. Similar causes affect pastureage requirements.

The general distribution of farms in the various acreage categories differs radically between provinces. In Manitoba nearly 11 per cent are under 100 acres, in Saskatchewan less than 2 per cent; in Manitoba 43 per cent are between 101 and 200 acres, in Saskatchewan only 31 per cent; in Manitoba 47 per cent are greater than 200 acres, in

Saskatchewan more than 67 per cent. Small scale farming and market gardening are seen to be much more common in Manitoba than in the sister province to the west. These types of farming are especially popular among the European settlers in the province. The same may be said of mixed farming (dairying) on the typical quarter section. Alberta resembles Manitoba in having a large proportion of these moderate sized farms with their diversified system of agriculture. In Saskatchewan, there is an unusual concentration on large scale cereal production.

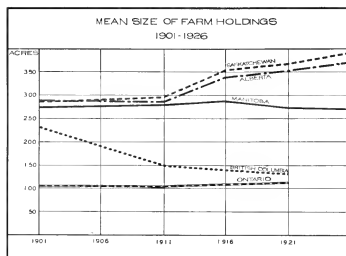


FIGURE 113.—Since 1911, the mean size of farms has been increasing rapidly in Saskatchewan and Alberta. In the six eastern provinces, changes have been relatively small. British Columbia shows a marked decline owing to the growth of fruit farming.

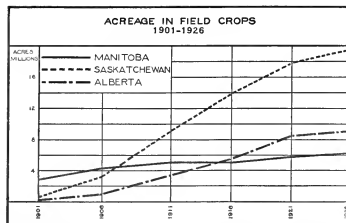


FIGURE 114.—The rapid increase in field crop acreage per farm in Saskatchewan and Alberta is in striking contrast with its comparative stability in Manitoba, Ontario and the East generally.

Although the Prairie Province region is of comparatively recent settlement, the percentage of farm tenancy is higher than in other parts of Canada.<sup>1</sup> In 1921, about a third more of the western farmers rented all or part of the land they operated than was the case in Ontario

and British Columbia and between four and five times more than in the other eastern provinces. In further contrast with eastern Canada, tenancy in the West, instead of declining, has been on the increase since the beginning of the century. An upward trend in tenancy is normally associated with the gradual emergence of a dominantly agricultural region from the homestead stage of development but it has been accentuated in the present decade by the purchase of land at inflated war prices and the subsequent relative decline in the prices of farm products. Many such purchasers found it impossible to keep up mortgage payments; foreclosure proceedings followed and the land reverted to tenancy. This cause operated more generally in Manitoba than in the other provinces.

Table 18 shows the changes in the proportions of farm holdings operated by owner, tenant and part owner and part tenant during the twenty-five years, 1901-1926.

TABLE 18  
PERCENTAGE OF FARM HOLDINGS OPERATED BY OWNER,  
TENANT, AND PART OWNER AND PART TENANT

Province	Owned		Rented	Part owned part rented
	p. c.	p. c.		p. c.
Manitoba.....	1926	73.8	17.5	8.7
	1921	82.0	11.4	6.6
	1911	83.4	10.4	6.2
	1901	88.9	5.0	6.1
Saskatchewan.....	1926	66.2	17.1	16.7
	1921	77.6	10.8	11.6
	1911	90.6	3.7	5.7
	1901	96.1	1.6	2.3
Alberta.....	1926	70.6	14.8	14.6
	1921	80.3	9.7	10.0
	1911	92.0	3.8	4.2
	1901	95.8	2.2	2.0

The increase in the proportion of farms which were part owner and part rented is of special significance. These farms, with the exception of the few extensive holdings operated by managers, are the largest in the region and represent a type of tenancy peculiar to the West—the tenancy of the successful farmer who has proved up his own holdings and then under the stimulus of the greater economy to be effected by the use of improved machinery and large scale operations, extends his operations by renting the land of his unsuccessful neighbour, with the object of ultimate purchase. Such tenancy is usually of a temporary sort, a passing stage in the trend towards larger scale farming. It is more common in Saskatchewan and Alberta than in Manitoba. In Manitoba a larger proportion of the tenancy is of the permanent type found in older agricultural regions.

Less tenancy is found in the moister "grove" region where the farms are smaller and mixed farming is more general. The large proportion of Continental European settlers in this area is a significant circumstance which is discussed more fully in a subsequent section of this monograph.

<sup>1</sup> It is still less than half as great as in the West North Central States, however.

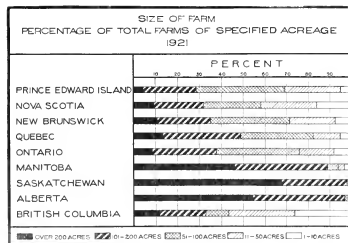


FIGURE 112.—In British Columbia, the most common size of farm is 11 to 50 acres; in eastern Canada, 51-100 acres; in the West, it exceeds 200 acres.

<sup>1</sup> O. E. Baker, *Agricultural Regions of North America*, Economic Geography, Volume 4, Number 4.

# SIZE AND TENURE OF FARMS

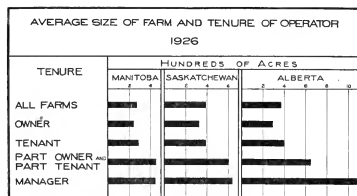


FIGURE 115.—Farms operated by managers and part owners and part tenants are materially larger than those operated by pure tenants. Those operated by owners are the smallest.

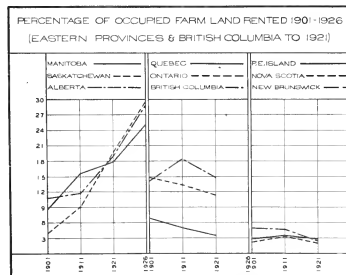


FIGURE 116.—In 1901, only 8 per cent of the occupied farm land in the Prairie Provinces was rented; in 1921, 19 per cent; and in 1926, 28 per cent. Compare the generally lower levels and declining trends for tenancy in the East.

FIGURE 117

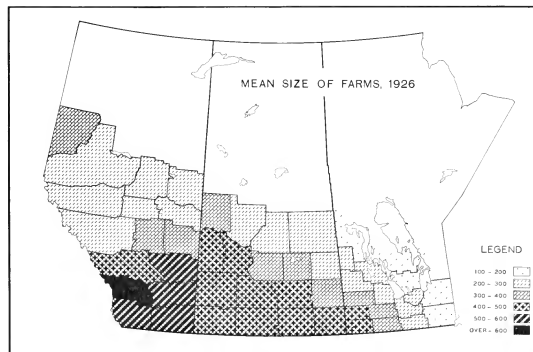
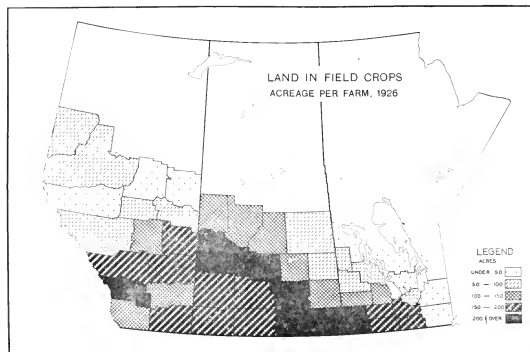


FIGURE 118



FIGURES 117, 118.—With the further commercializing of agriculture and the increasing use of larger and more efficient machinery both in the cultivation of the land and the harvesting of crops, it is possible, indeed probable, that farms will become appreciably larger in the treeless grain growing section of the prairie region; but the development of dairying, should such continue, may be expected to make for a reduction rather than an increase in the size of farms in the sub-humid section.

FIGURE 119

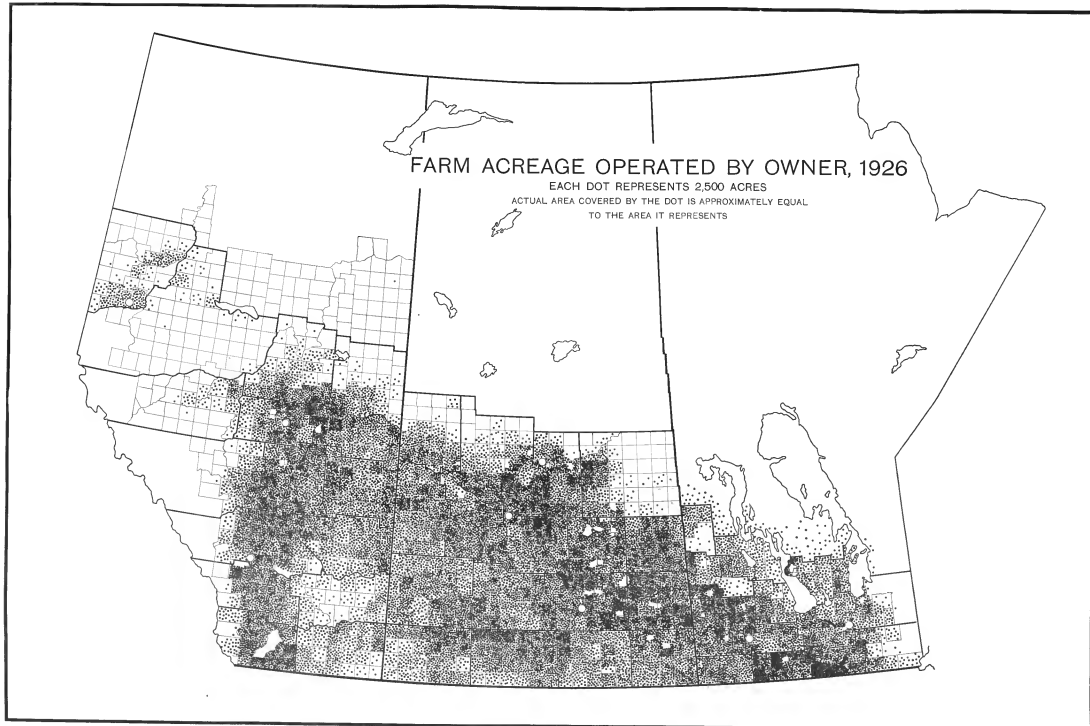


FIGURE 119.—Farms operated by manager amount to less than 1 per cent of the total and their acreage is included with that operated by owners. In western Canada, larger proportions of Continental Europeans own their farms than of either the British, Canadian or United States born. The proportions of occupied acreage which were operator-owned in 1926 were as follows:—for the Continental European born, 77 per cent; British Isles born, 72 per cent, Canadian born, 71 per cent; and United States born, 64 per cent.

## SIZE AND TENURE OF FARMS

FIGURE 120

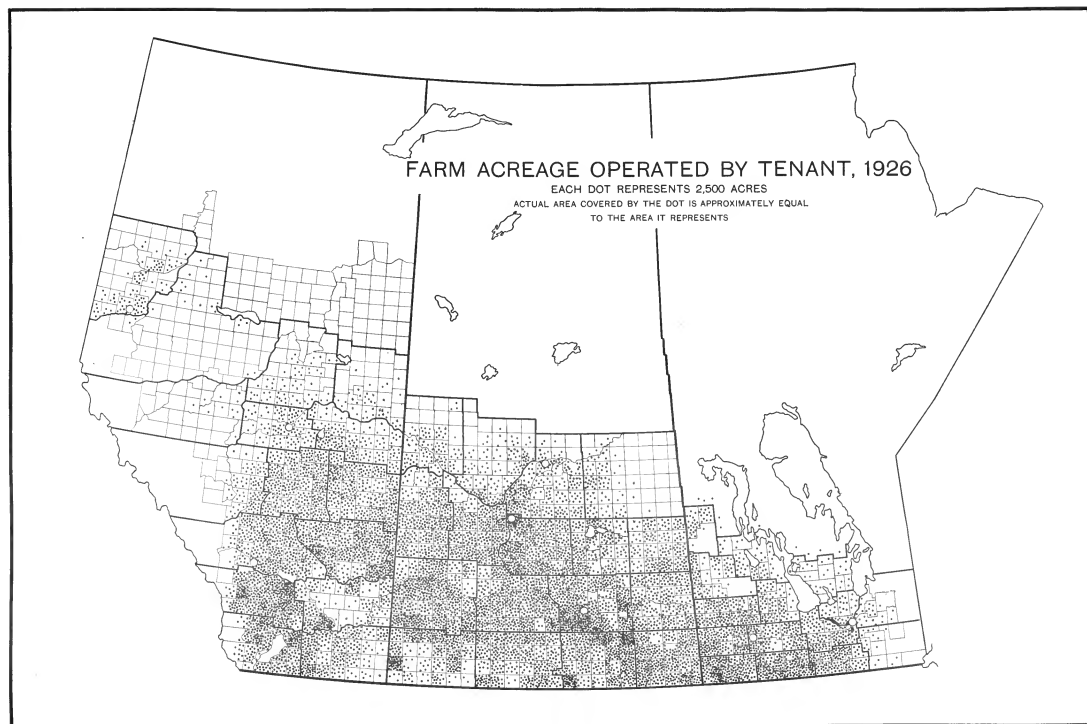


FIGURE 120.—Tenancy is further advanced in the drier central and southern sections of the prairie region than in the sub-humid park belt. Recency of settlement, limited capital and perhaps a somewhat less commercial outlook on the part of a large portion of certain important classes of settlers must be associated with climatic, topographical and other natural factors in explaining the smaller scale operations and the smaller amount of tenancy on the northern fringe of settlement.



# SIZE AND TENURE OF FARMS

FIGURE 121

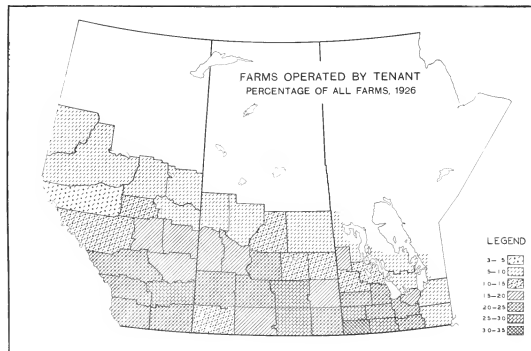


FIGURE 122

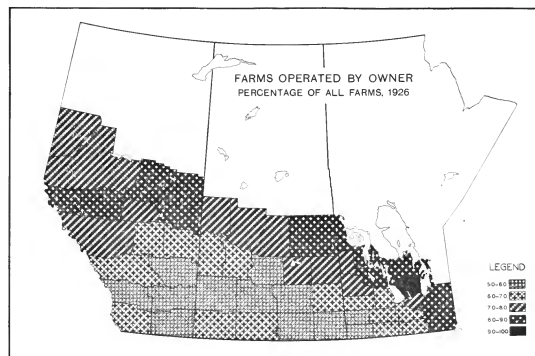


FIGURE 123

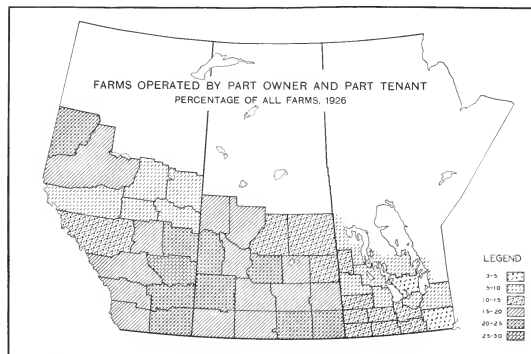
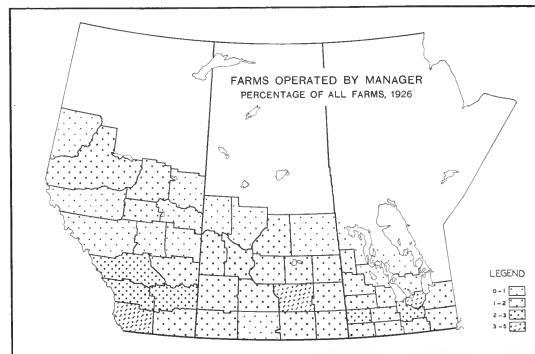


FIGURE 124



FIGURES 121-124.—In the prairie region there are nearly as many farms operated on a part owner part tenant basis as under pure tenancy. Of the pure tenants, 83 per cent rent on shares, 16 per cent for cash and less than 1 per cent on a joint cash and share basis. Approximately 75 per cent of the part owners part tenants hold the rented portion of their acreage on shares and 25 per cent for a cash rental. The larger proportion of cash tenants among this latter class of occupiers is indicative of a better financial position and a different type of tenancy from that of the pure tenants.

## SIZE AND TENURE OF FARMS

FIGURE 125

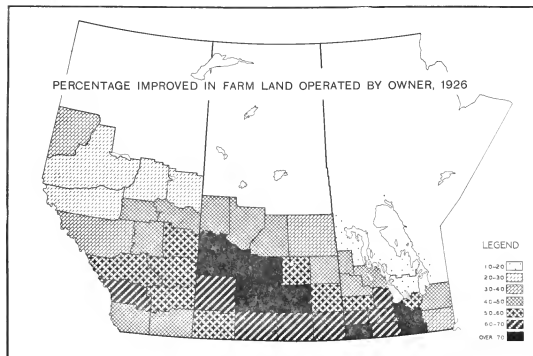
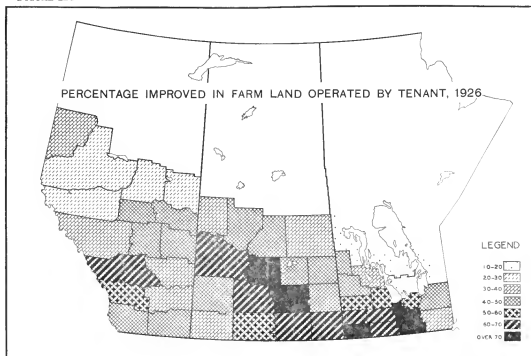


FIGURE 126



FIGURES 125, 126.—An analysis of the data from which Figures 125 and 126 were prepared shows that in 40 out of 49 census divisions, improved land formed a smaller proportion of the acreage occupied by tenants than was the case with that occupied by owners. The difference was naturally very marked in the arid ranching district. Speaking generally, however, in Saskatchewan and Alberta where the percentage improved is considerably smaller in the rented acreage than in that occupied by owners, tenancy seems to be a common device for expanding the scale of farm operations. In Manitoba, where the reverse is true, one finds evidence of the beginning of a more or less permanent type of landlordism.

FIGURE 127

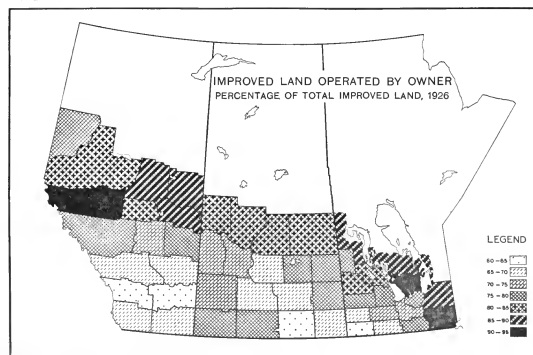
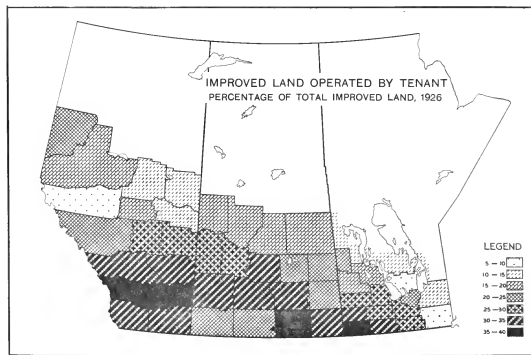


FIGURE 128



FIGURES 127, 128.—Contrast tenancy on the more recently settled northern and western sub-humid fringe and in the older and drier prairie portions of the region. (Note the difference in legends.)

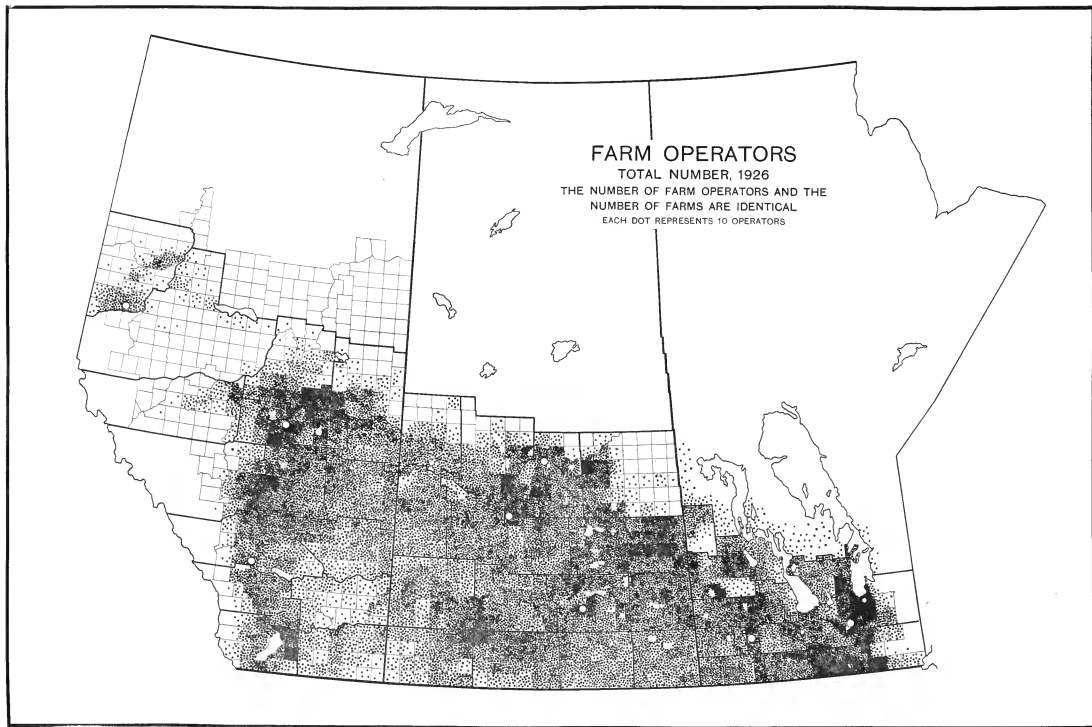


FIGURE 129.—In Manitoba, the greatest concentrations of farms occur in the Ukrainian settlements, north, east and southeast of Winnipeg and on either side of the Riding Mountains, and in the Mennonite settlements south of Winnipeg. In Saskatchewan, they occur in the Ruthenian, Galician and Scandinavian districts north of Yorkton and east of Prince Albert, and in the mixed Continental European settlements north of Saskatoon and southeast of Swift Current; in Alberta, in the Ukrainian and Russian district northeast of Edmonton, in the mixed European districts south of that city and in the Mormon settlement near Lethbridge. Continental Europeans are found where farms are small and rural settlement densest.

# FARM VALUES

THE large scale character of farming operations in the West is made very evident by an analysis of farm values. In 1926, the combined value of land, buildings, implements and machinery, and live stock on the average farm in the Prairie Provinces totalled \$10,500, somewhat higher in Saskatchewan, and lower in Manitoba and Alberta. In 1921, the Prairie Province farmer operated an agricultural unit with a capital value from three to four times greater than that of the average farm in the Maritime Provinces and over half again as large as that in Ontario or Quebec.

The greatest single item in the total value of farm property is land. This is true of the eastern provinces as well as the West, but on the Prairies, land constitutes a much larger proportion of the aggregate. This item accounts for between 60 and 65 per cent of the capital value of the average agricultural unit in western Canada, as compared with 47 per cent in Ontario and from 40 per cent to 45 per cent in the Maritimes. In other words, while the combined value of all classes of farm property possessed by the average western farmer is about 50 per cent greater than that of the farm operator in Ontario, the value of his land is double that of the Ontario farmer. Of course land is cheaper in the West than in the provinces of Ontario and Quebec, yet to say that the prairie farmer operates a large acreage of cheap land, while the eastern farmer uses a small acreage of dear land is an inadequate explanation of the difference. In spite of its lower price, land constitutes a 20 to 30 per cent larger proportion of the western farmer's total investment.

While implements and machinery represent about the same proportion of the farmer's capital investment in all provinces of Canada, excepting Nova Scotia and British Columbia, the dollar value of this class of equipment on the prairie farm is about double that on the average farm in Ontario and over 60 per cent greater than in Quebec. This does not mean, however, that there is more machinery per acre occupied or even per acre improved. In fact the reverse is more generally true as is shown in the following table:—

TABLE 19

VALUE OF FARM IMPLEMENTS AND MACHINERY PER ACRE OCCUPIED AND PER ACRE IMPROVED, BY PROVINCES, 1921

Province	Value per acre occupied	Value per acre improved
	\$	\$
Prince Edward Island.....	5-65	8-94
Nova Scotia.....	2-15	10-22
New Brunswick.....	3-17	9-90
Quebec.....	6-49	12-35
Ontario.....	7-51	12-91
Manitoba.....	4-64	8-42
Saskatchewan.....	4-01	7-06
Alberta.....	3-32	5-40
British Columbia.....	3-28	17-25

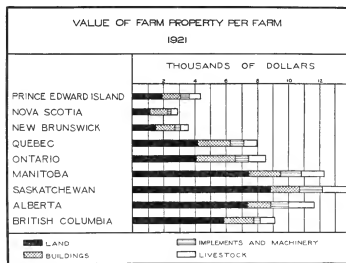


FIGURE 130.—The large scale farming of the prairie region involves a large investment per farm in land, live stock and new machinery. As yet the value of buildings per farm is smaller than in the older provinces of Ontario and Quebec.

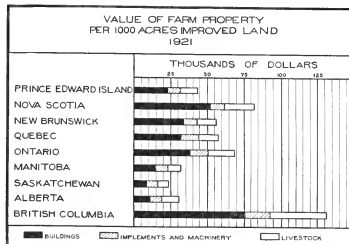


FIGURE 131.—The western farmer cultivates a large acreage of low priced land with a relatively small per acre outlay in buildings, equipment and live stock.

The larger farm units in the West have more live stock than is found on the average farm in other parts of Canada. Here again the situation is very similar to that of implements and machinery. The farmer has a greater total investment in farm animals but their value per acre occupied or improved is considerably lower.

In the Prairie Provinces, buildings constitute a materially smaller proportion of the total farm investment than in other parts of Canada. On the average western farm this item amounts to less than 15 per cent, as against 29 per cent in Ontario, 26 per cent in Quebec, and about 34 per cent in the Maritimes as a whole. Two causes contribute to this result; first, the proportionately greater investment in land with the different type of farming that this implies, and second, recency of settlement.

Finally, attention is directed to Table 20, which traces the essential changes in the general agricultural development of the West since the beginning of the century. It depicts the early beginnings with a minimum of machinery and of housing facilities for man and beast, but with a considerable relative investment in live stock. There follows rapid addition to the stock of implements and later improvement in farm buildings, both of which are associated with a proportionate decline in the relative importance of live stock in the capital account of the agricultural industry.

TABLE 20

PROPORTION OF VALUES OF THE SEVERAL KINDS OF FARM PROPERTY TO ONE ANOTHER, 1901-1926

Province	Year	Value of implements and machinery per \$100 invested in buildings	Value of live stock per \$100 invested in implements and machinery	Value of live stock per \$100 invested in buildings
		\$	\$	\$
Manitoba.....	1926	60	58	96
	1921	90	97	112
	1911	45	100	224
	1901	61	129	215
Saskatchewan.....	1926	79	65	83
	1921	82	91	111
	1911	76	152	201
	1901	75	242	325
Alberta.....	1926	75	81	108
	1921	82	113	139
	1911	59	205	347
	1901	61	440	724

FIGURE 132

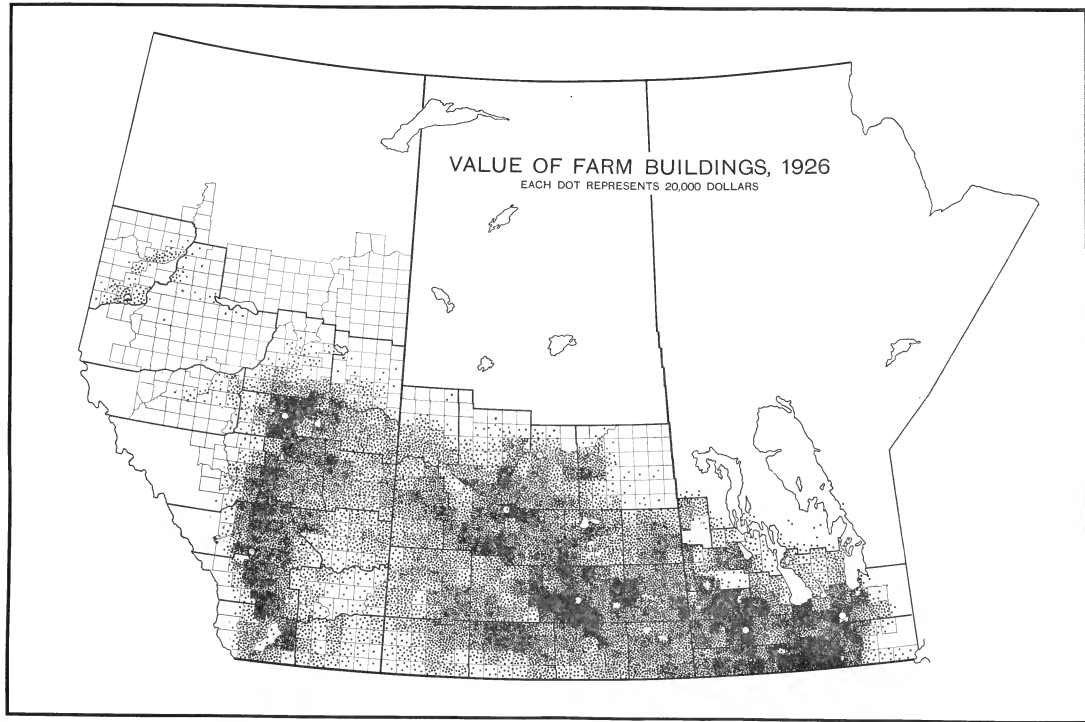


FIGURE 132.—The value of farm buildings in the prairie region constitutes about 33 per cent of the total for all Canada (1921). During the first twenty-five years of the century their deflated value multiplied over eight fold; in the same period occupied acreage increased five fold. In 1926, the investment in buildings per acre occupied averaged \$6.70 in Manitoba, \$4.70 in Saskatchewan, and \$4.10 in Alberta. If the history of eastern agriculture is to be repeated on the prairies, investment in buildings may be expected to proceed more rapidly than investment in live stock during the next decade.

## FARM VALUES

FIGURE 133

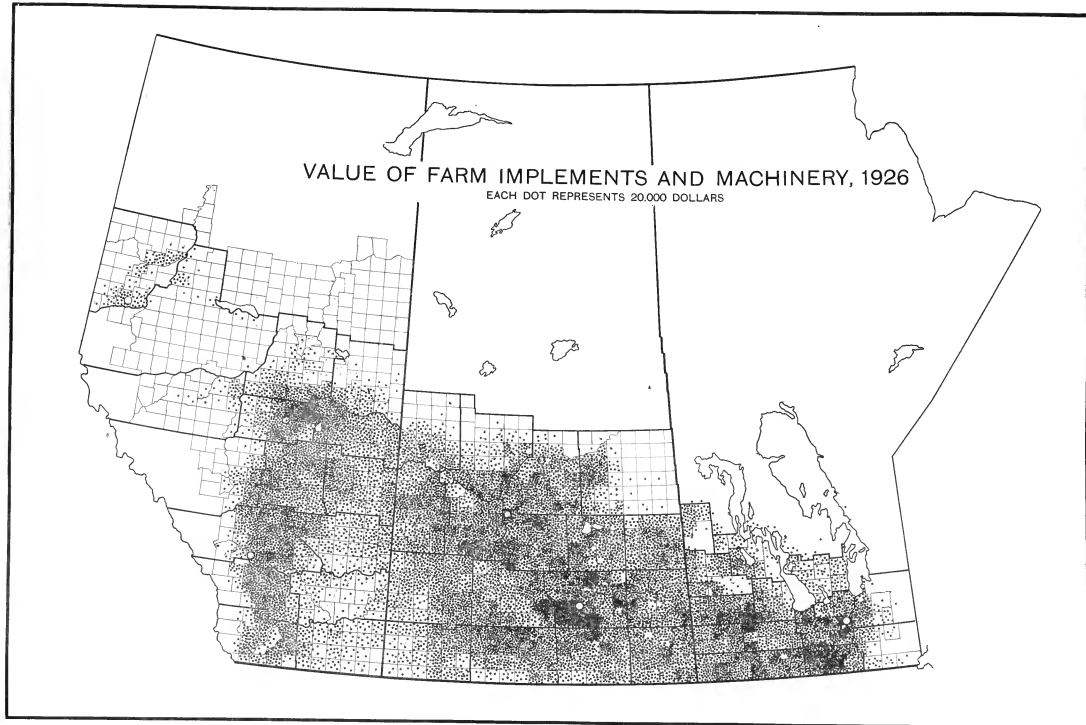


FIGURE 133.—The total value of agricultural machinery in the three Prairie Provinces amounted to \$315,000,000 in 1926, a sum three-quarters as great as the aggregate investment in farm buildings. Western Canada has about 50 per cent of the agricultural machinery in the Dominion (1921), yet the value of implements and machinery per acre in farms is appreciably lower than in Ontario and Quebec and their value per acre improved is materially lower (33 per cent). On June 1, 1926, the value of implements and machinery per acre occupied averaged \$4 in Manitoba, \$3.70 in Saskatchewan, and \$3.10 in Alberta.

FIGURE 134

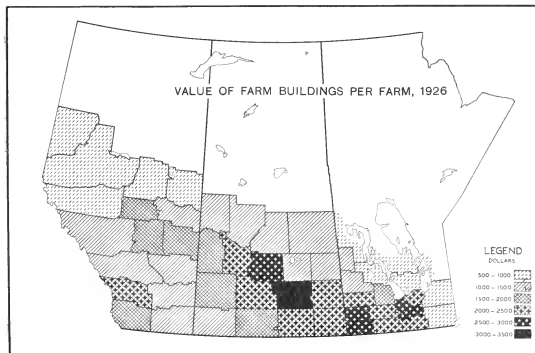


FIGURE 136

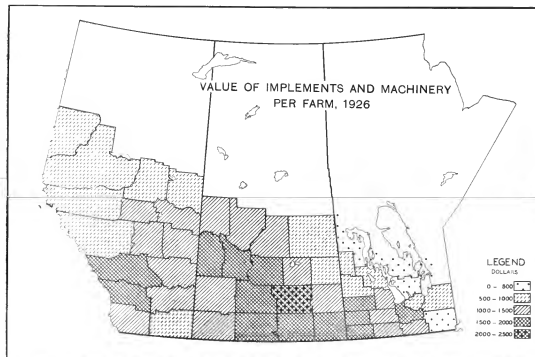


FIGURE 135

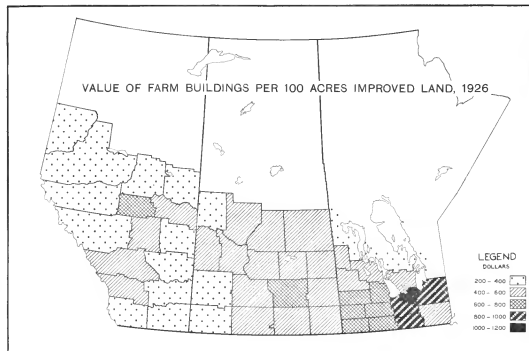
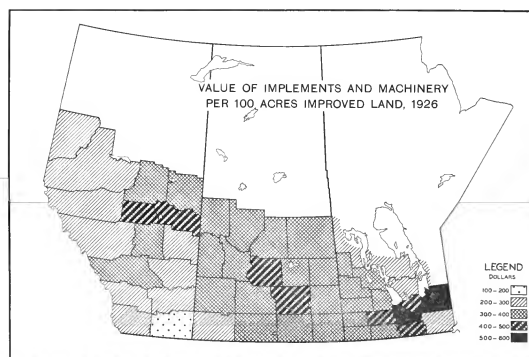


FIGURE 137



FIGURES 134-137.—The value of farm buildings *per 100 acres improved* is much higher around Winnipeg than elsewhere in the West and decreases in a striking fashion as one moves westward toward the dry belt. In the strip of land between Calgary and Edmonton moderately high values are again encountered. The greatest investment *per farm* occurs in the Regina-Saskatoon section, the centre of the large scale wheat area. In the older settled district of southern Manitoba and the irrigated area of southwestern Alberta values are also high. The investment in implements and machinery *per 100 acres improved* is particularly heavy in the mixed farming districts adjacent to Winnipeg and Edmonton and the wheat growing area between Regina and Saskatoon. The investment *per farm* is at a maximum in the vicinity of Regina. (Note difference in legends.)

## FARM VALUES

FIGURE 138

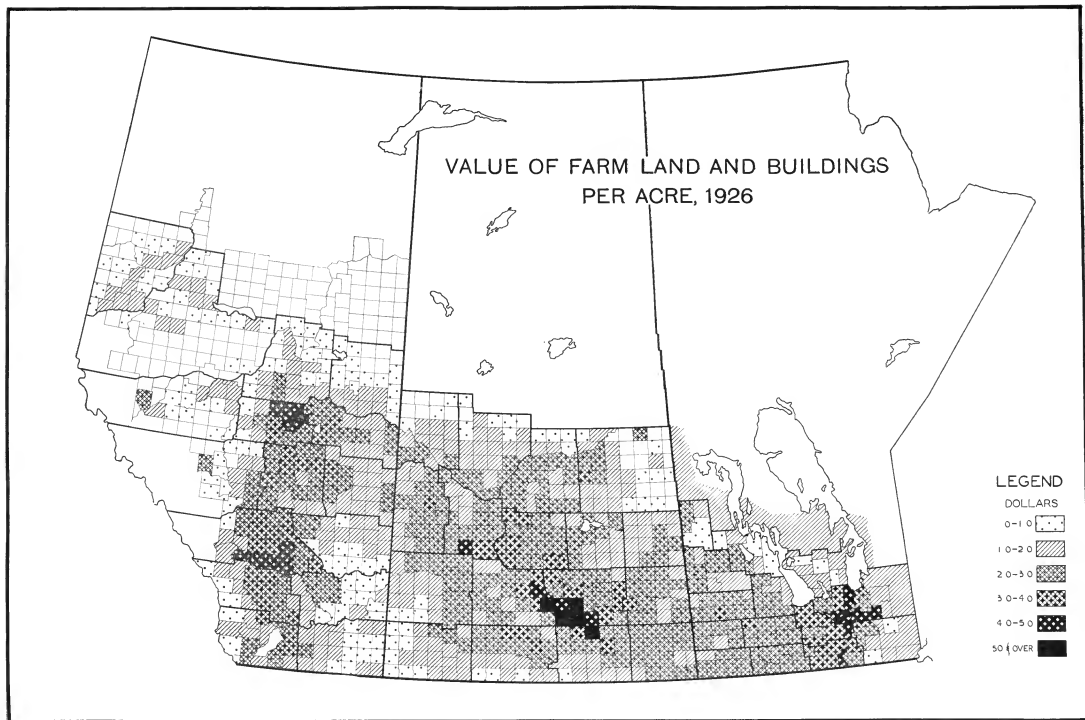


FIGURE 138.—The value of land and buildings per acre occupied is smallest on the more remote newly-settled fringe and in the dry grazing country. The highest values occur in districts adjacent to Winnipeg, Regina, Edmonton and Calgary and in the irrigated parts of southwestern Alberta. The post-war deflation in prices of farm products materially reduced the market value of land and buildings per acre in all three provinces. Between 1921 and 1926, the value of land per acre fell 29 per cent in Manitoba, 26 per cent in Saskatchewan and 17 per cent in Alberta; and the value of buildings 14 per cent, 6 per cent, and 1 per cent, respectively. The decline was most severe in Manitoba where there was little new breaking and few additions were made to buildings.



FIGURE 139

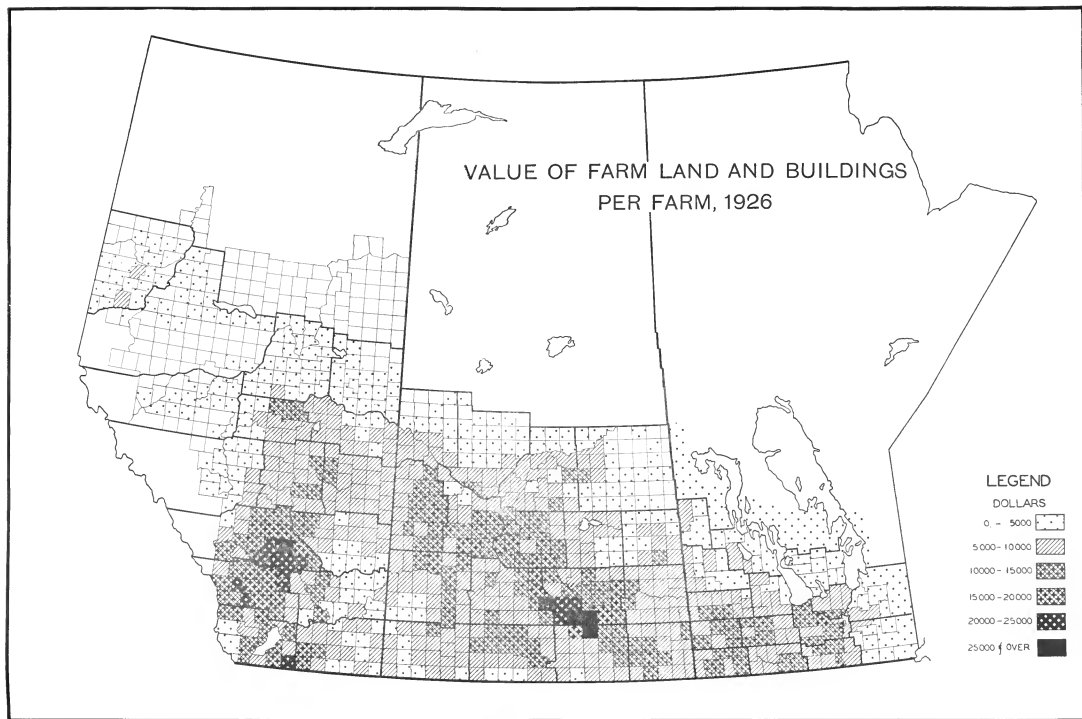


FIGURE 139.—In 1921, the combined value of farm land and buildings in the prairie region (\$2,516,000,000) constituted 50 per cent of the total for Canada. Figure 139 shows relatively high values per farm in the older settled parts of Manitoba where buildings are good and farms of moderate size, in the wheat growing district of central Saskatchewan where farms are large and in the irrigated section of southwestern Alberta where land values are high. In the dry belt straddling the southern portion of the boundary between Saskatchewan and Alberta, farms are large but the land is poor on the northern fringe of settlement farms are smaller and buildings less adequate.

FIGURE 140

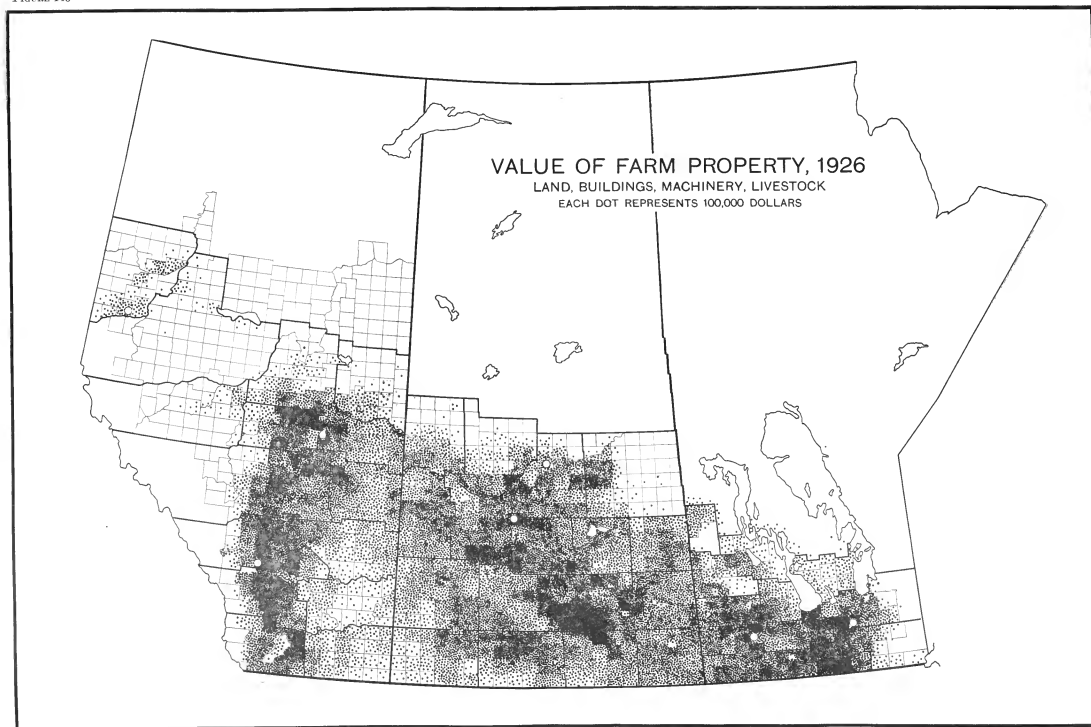


FIGURE 140.—In 1921, the combined value of land, buildings, implements, machinery and live stock on the average farm in the Prairie Provinces totalled \$12,800. In the Maritimes the value of the average farmer's property amounted to only between \$3,000 and \$4,000; indeed the figure for Nova Scotia was as low as \$2,900. In Quebec and Ontario the average investments were \$8,000 and \$8,500, respectively; and in British Columbia, where high priced fruit land is an important item, the mean figure approximated \$6,000. Even that is more than 25 per cent less than the average on the prairies.

# FARM FACILITIES

75

FIGURE 141

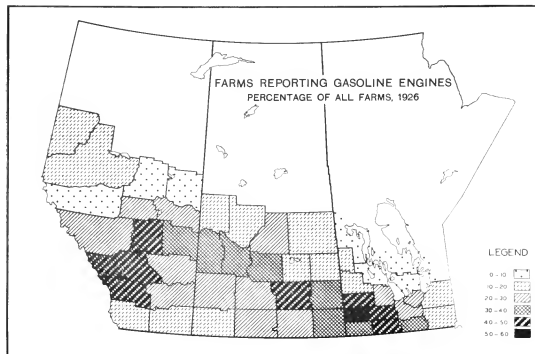


FIGURE 142

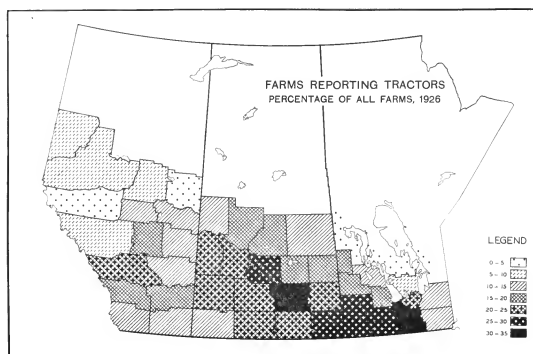


FIGURE 143

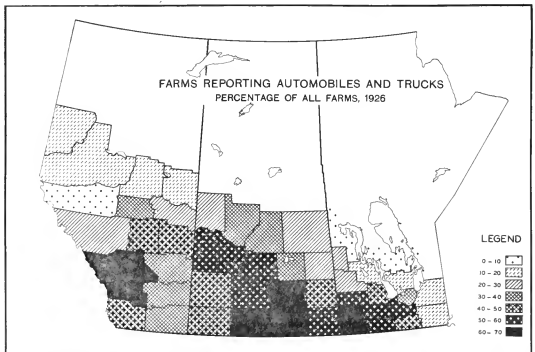
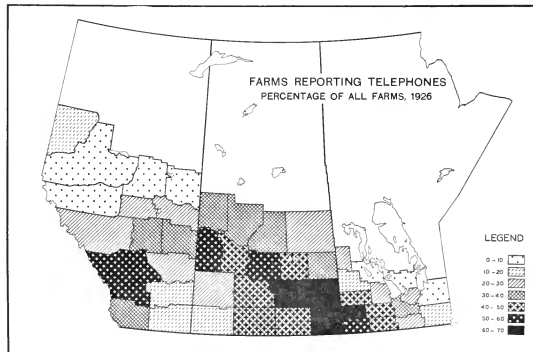


FIGURE 144



FIGURES 141-144.—In 1926, 44,782 or 18 per cent of the farms in the Prairie Provinces reported tractors; 63,300 or 26 per cent reported gasoline engines; 89,493 or 35 per cent, telephones; and 101,155 or 41 per cent, automobiles or trucks. Manitoba and Saskatchewan reported the largest proportions of farms with tractors (20 per cent); the proportions with gasoline engines were practically the same for all three provinces; more of the Saskatchewan farmers had telephones, 43 per cent as compared with 27 to 28 per cent in Manitoba and Alberta; and more had automobiles or trucks, 44 per cent as against 37 to 38 per cent in the other provinces. There is a marked similarity between the maps in that all are lighter in the dry area and on the northern fringe. (Note difference in legends.)

## FARM FACILITIES

FIGURE 145

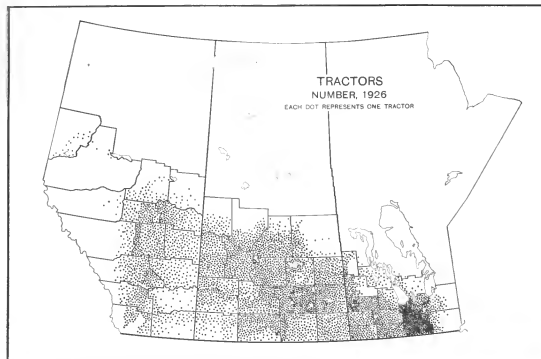


FIGURE 147

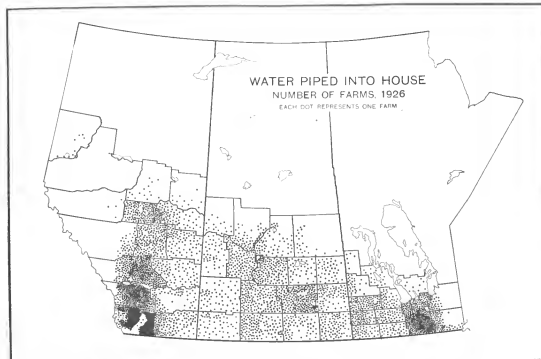


FIGURE 146

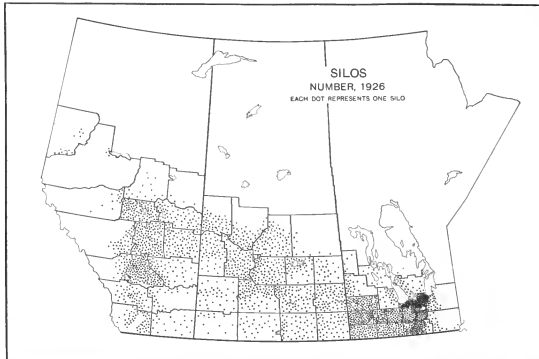
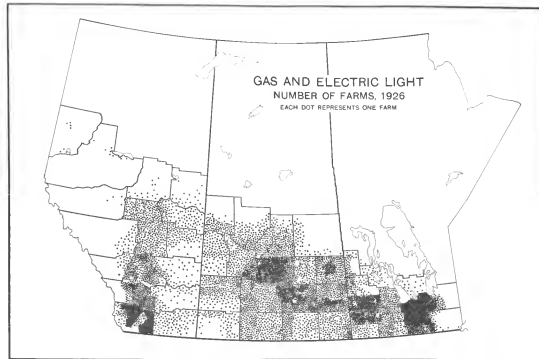


FIGURE 148



FIGURES 145-148.—Tractors are widely distributed over the prairie region. In 1926, they were most numerous in the old established farming district west and south of Winnipeg. Less than 1 per cent of all farms reported silos and as in the case of tractors the greatest concentration was in Manitoba. Sixteen out of every 1,000 farms had water piped into the house, this convenience being most common in eastern Manitoba and southwestern Alberta. Approximately 29 per 1,000 reported gas or electric light. While the province of Saskatchewan as a whole was better served in this regard than either of the others, the greatest densities appear in eastern Manitoba where the farms are of moderate size (Provincial Hydro) and in southwestern Alberta (domestic plants).

ONLY in the fruit and vegetable growing province of British Columbia and the dairying and fruit producing provinces of Ontario and Nova Scotia is the expenditure on labour per 1,000 acres improved land clearly in excess of the average for the prairie region. Of the three Prairie Provinces, Manitoba, where settlers are on the whole better established and where a certain amount of fairly intensive farming is practised, spends most on farm labour per acre improved. Saskatchewan spends least. More recent settlement is in part responsible for this situation. Shorter rotations and larger proportions of improved land in fallow (as compared with Manitoba), and a high percentage of Continental European born farm operators with small capital and large families (as compared with Alberta), are doubtless also contributory causes.

A comparison of data for 1920 and 1925 indicates a decided reduction in the employment of farm labour in both Manitoba and Alberta, and probably also in Saskatchewan, a reduction which is chiefly attributed to the more general use of power machinery, although the maturing of the families of the large numbers of immigrants arriving in the years immediately preceding the war may well be a factor of some local importance.

The negligible expenditures on manure and fertilizer in the western farming area require little comment. (Fig. 150.) They bear witness to the phenomenal fertility of the prairie soils and to the existence of climatic conditions favourable to the retention of the nitrates, lime and potassium salts, to which reference has been made. Had it not been for such circumstances, the soil of this western plain would have shown

to a much more marked degree the effects of the continual cropping to which it has been and continues to be subjected.

The comparatively low expenditure for feed in terms of improved acreage reflects the presence of relatively smaller numbers of farm animals, as well as the practice of raising fodder on the farm where it is fed.

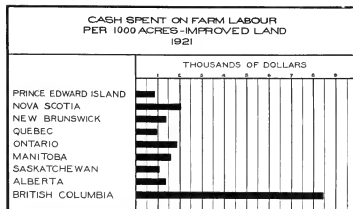


FIGURE 149—In 1925, the expenditure for farm labour per 1,000 acres improved land in the prairie region was 26 per cent less than in 1920 in the face of only a 22 per cent decrease in wage rates, and a 31 per cent increase in per acre yields for the three principal cereals.

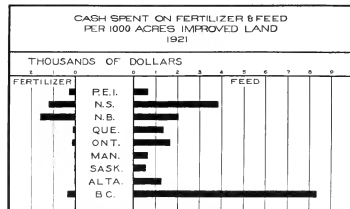


FIGURE 150—In 1925, the expenditure for fertilizer in the prairie region totalled \$46,000, or less than 94 cents per 1,000 acres improved; the expenditure for feed was \$3,300,000 or \$168 per 1,000 acres improved.

FIGURE 151

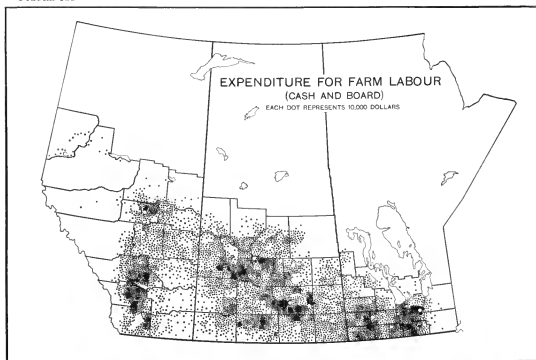
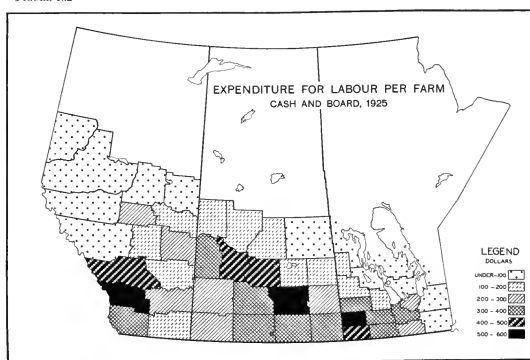


FIGURE 152



FIGURES 151, 152.—Except in the market gardening district immediately adjacent to Winnipeg, large expenditures for farm labour occur, not in the mixed farming or dairying areas, but in the well-established cereal (particularly wheat) producing sections of the region. (Compare Figure 48.) The larger expenditure per farm in the grain growing districts is attributable only in part to bigger farms.

## ABANDONED FARMS

THE acreage in vacant or abandoned farms in 1926 in the three Prairie Provinces amounted to slightly over 4,000,000 acres, a total three and a half times greater than the entire farm acreage of Prince Edward Island and almost equal to that of Nova Scotia or New Brunswick. Yet, large though it was, it represented only 4.5 per cent of the total occupied farm land of the prairie region. In Alberta, both the proportion (8.2 per cent) and the actual area of such land were considerably greater than in either of the other provinces. Preceding 1926, a succession of dry years in the southern part of that province occasioned the wholesale evacuation of a considerable section of the region. Some of this farm land has since been reoccupied but temporary emigration, occurring as it did just prior to the census, contributed largely to the high proportion of vacant and abandoned land in Alberta at that time. Manitoba followed Alberta with 4.6 per cent of her farm acreage vacant and Saskatchewan was the lowest with only 2.2 per cent.

In each of the three provinces the unoccupied farms are for the most part a quarter of a section or less in area. This class accounted

for over 90 per cent of all abandoned farmsteads in Manitoba, 76 per cent in Saskatchewan, and 67 per cent in Alberta. The proportions exceeding 480 acres were negligible in all three provinces, but in Alberta very considerable numbers (30.5 per cent) were between 161 and 480 acres, and in Saskatchewan 21.7 per cent. The exodus from southern Alberta was from an area of large wheat farms. The mean

size of abandoned farms in Alberta was 224 acres, and in Saskatchewan and Manitoba 208 acres and 175 acres respectively.

Every abandoned and vacant farm emphasizes the necessity for care in the choice of land and expert direction for the new settler if successful settlement is to be effected.

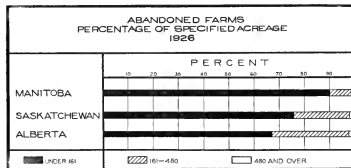


FIGURE 153.—In 1926, there were 19,000 vacant or abandoned farms in the prairie region, or 7.7 per cent of the total farms; 71 per cent were under 161 acres.

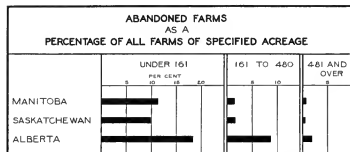


FIGURE 154.—Over 14 p.e. of all farms under 161 acres in the prairie region were vacant or abandoned in 1926; 4.0 per cent of those between 161 and 480 acres; and less than 1.0 per cent of those over 480 acres.

FIGURE 155

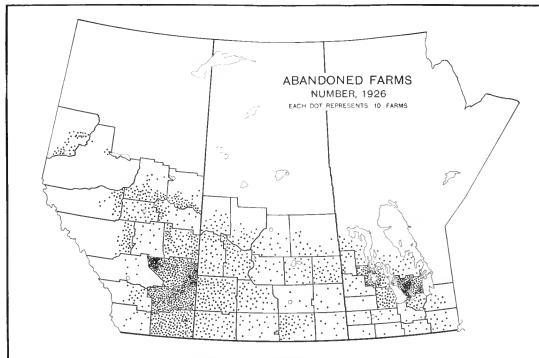
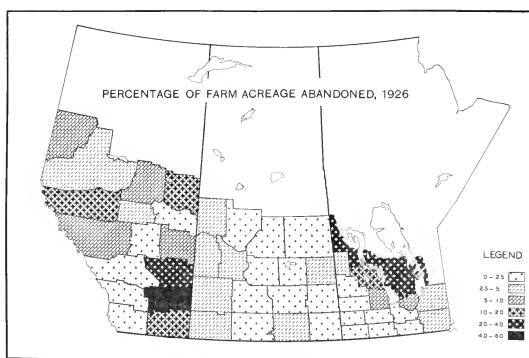


FIGURE 156



FIGURES 155, 156.—In an area with nearly 250,000 farms a certain number of vacant holdings is to be expected at any given time owing to the shifting of tenants, deaths, etc. Such causes, however, do not account for more than a fraction of the abandoned acreage in the West. Much land has been abandoned because of unfavourable soil or climatic conditions, e.g. northern Manitoba and southeastern Alberta. The post war depression in agricultural prices accentuated the movement.

FIGURE 162

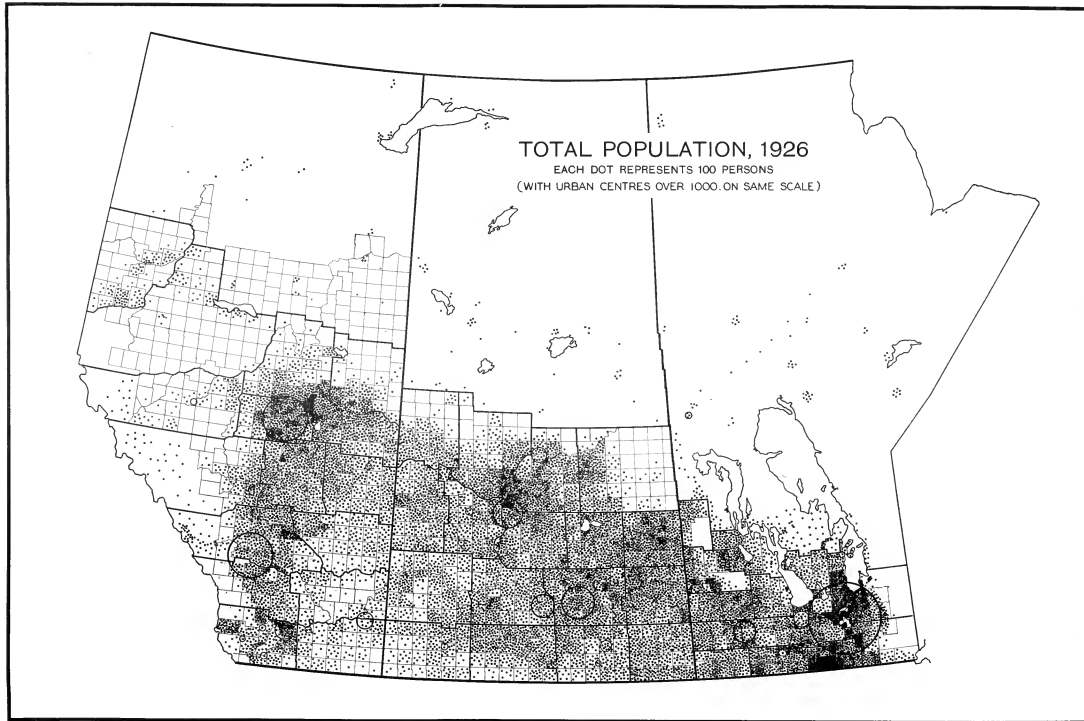


FIGURE 162.—Great as has been the westward movement of population during the first quarter of the century, settlement in the Prairie Provinces is still in its infancy. A narrow strip of territory north of the 49th parallel of latitude and varying in width from 200 to 300 miles includes all but a negligible portion of the inhabitants of these three provinces. Even in this area settlement is sparse as compared with the older agricultural regions of the eastern and southern parts of the continent. In 1901, the combined population of Manitoba, Saskatchewan and Alberta constituted 8 per cent of the total population of the Dominion; in 1921, 22 per cent.

FIGURE 163

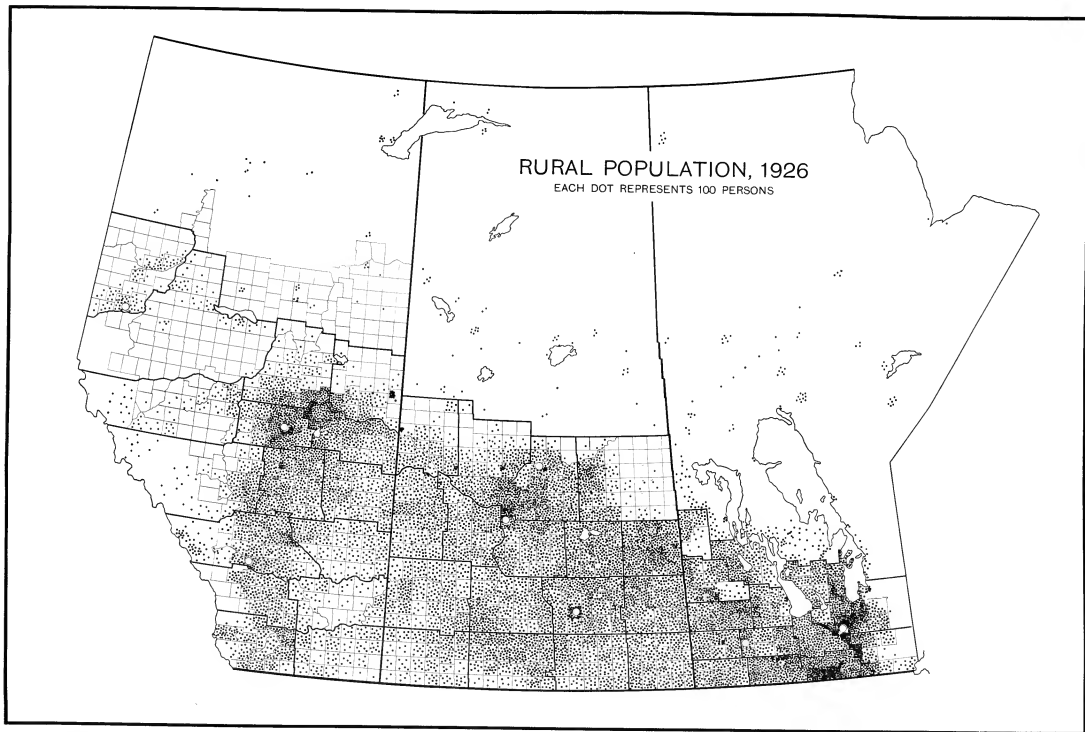


FIGURE 163.—The distribution of rural population is very similar to that of farm operators (Figure 129) and the comments made about that map are equally applicable here. Relative, rather than absolute, densities should be compared because of differences in scales. In 1901, the rural population of the West numbered 316,000 or 75 per cent of the total population of the region; in 1926, 1,312,000 or 63 per cent. At the beginning of the century rural residents in the three Prairie Provinces constituted 9 per cent of the rural population of the Dominion; in 1921, 28 per cent.



FIGURE 164

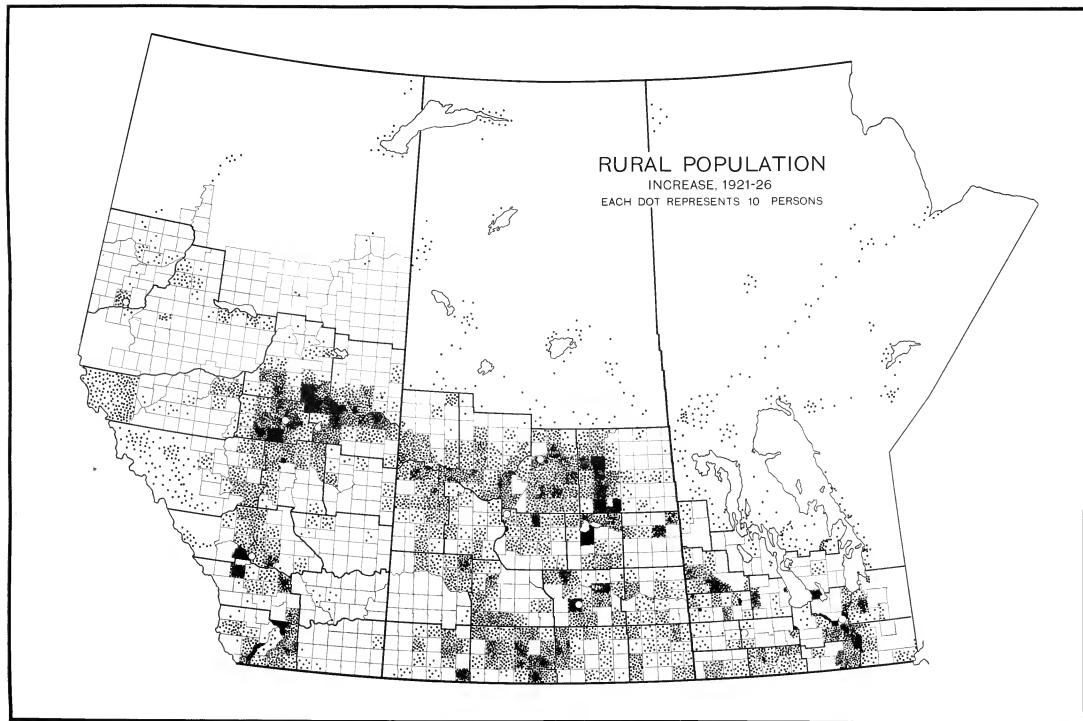


FIGURE 164.—Between 1921 and 1926, rural population increased with the growth of small scale intensive farming in eastern Manitoba and with the expansion of occupied acreage in the southern part of the province and west of the Riding Mountains. In northern and western Saskatchewan, settlement expanded rapidly after 1921; and increased population attended an increase in occupied acreage, both in the Regina district and in the area skirting the dry belt. In Alberta, rural population grew most rapidly in the mixed farming sections to the north and west and in the Mormon district to the south. Generally speaking, expansion in occupied and improved acreage (Figure 34) was definitely associated with increases in rural population (except in eastern Manitoba).

## POPULATION

FIGURE 165

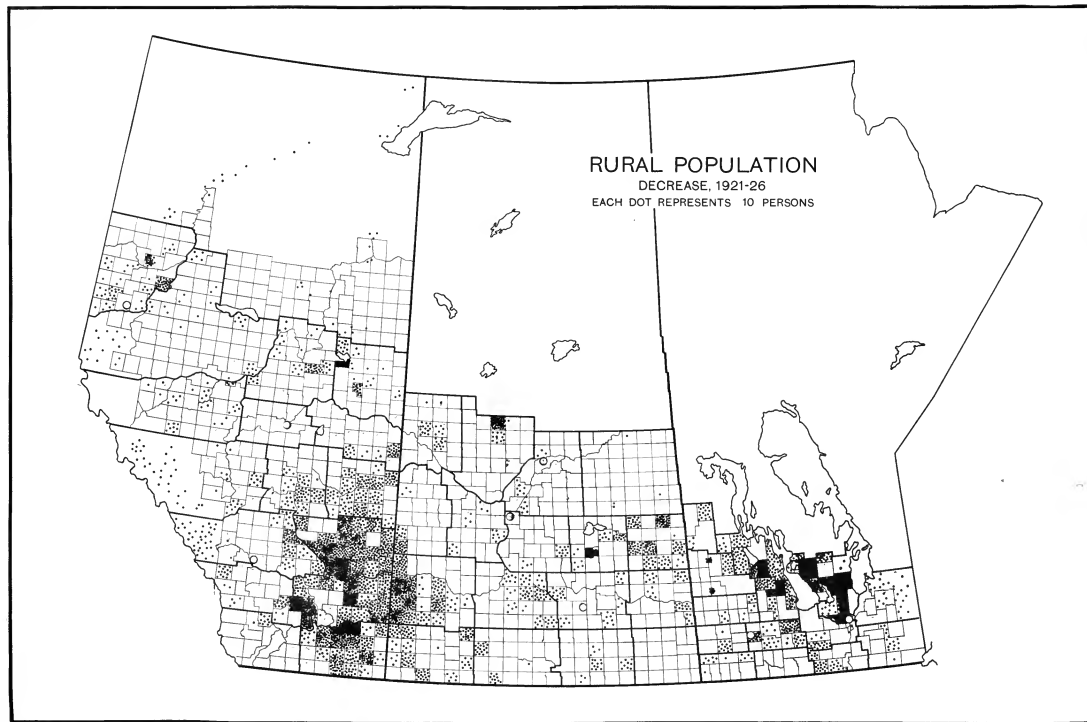


FIGURE 165.—Rural population decreased in the inter-lake district of Manitoba and east of the Riding mountains in both of which areas much farm acreage was abandoned during the period (1921-1926). Abandoned farms are also associated with the decreases in rural population in the arid portion of southwestern Saskatchewan and southeastern Alberta. A variety of purely local causes was operative in individual municipalities removed from these areas. The influence of mechanization on resident rural population seems to be discernible in the districts to the north and west of the dry belt in Alberta (C.D's 6, 7 and 8) and northwest of Regina. Elsewhere its effect is concealed by a contraction in farm acreage.

ONLY a third of the farms in the prairie region are operated by native Canadians—45 per cent in Manitoba, 34 per cent in Saskatchewan, and 27 per cent in Alberta. Farm operators born in parts of the Empire outside Canada (chiefly in the British Isles) represent 18 per cent of the total. Thus the British born, including Canadian, occupy slightly over half the farms, the combined total running as high as 63 per cent in Manitoba and falling to 46 per cent in Alberta.

The relationship between the size of farms and the nativity of farm operators is presented in Table 22. The European born as a whole farm on a smaller scale. Approximately 46 per cent of the farmers of this nativity were operating farms of a quarter of a section or less in 1926, which figure compares with 34 per cent for immigrant farmers from the British Isles and 32 per cent for native Canadians. The same tendency is noted in each of the provinces, in Manitoba as large a proportion as 72 per cent of the European born being found on the smaller farms. Settlers from the United States, on the other hand, practise on the average somewhat larger scale farming than even the native Canadians, probably reflecting the influence of large scale operations in the spring wheat region to the south of the border from which many of these settlers came, their consequent preference for the level prairie which is peculiarly suited to this type of agriculture, and their possession of more adequate supplies of capital.

TABLE 22

NATIVITY OF FARM OPERATORS AND SIZE OF FARMS, PRAIRIE PROVINCES, 1926

Birthplace	Percent operating farms under 161 acres				Percent operating farms over 480 acres			
	Total	Man.	Sask.	Alta.	Total	Man.	Sask.	Alta.
United States.....	30	42	25	33	23	14	23	23
Canada.....	32	39	25	37	18	12	22	18
British Isles.....	34	40	28	40	15	13	16	15
Europe.....	46	72	34	47	12	4	16	12

More of the Continental European settlers own their own farms than of either the native born or immigrants from the United States and Great Britain. Particularly is this characteristic of the southeastern and central Europeans of Manitoba and Alberta, where between 83 and 86 per cent own all the land on which they work.

Comparatively small numbers operate on either a part owner and part tenant basis or as pure tenants. Moreover, when the total farm acreage operated by the several nativity groups is classified according to type of tenancy (Fig. 167), it becomes increasingly clear that the European in western Canada is not at least as yet, a tenant farmer. He is pre-eminently the owner-operator of the Canadian West. The United States immigrants are at the opposite extreme. As few as 58 per cent are pure owners in Saskatchewan and only 61 per cent in Alberta where, as has been pointed out, these immigrants constitute about one quarter of all farm operators. On the other hand, between 38 and 40 per cent of the farm operators of United States origin in these two provinces are either pure tenants or part owner and part tenants and 35 per cent in Manitoba. Geographical, financial and probably cultural causes contribute to these differences.

Statistics showing length of residence of farm operators are at once interesting and thought provoking. (Fig. 168.) Nearly 54 per cent of the farm operators of southeastern and central European birth had been resident in Canada more than 20 years in 1926 as against the smaller figures of 49 per cent for immigrants from Great Britain, 39 per cent for the northwestern Europeans, and 37 per cent for settlers from the United States. Like differences are found in each of the

provinces, and estimates of the length of residence of those arriving within the past 20 years, rank the nativity groups in precisely the same order. At first glance it would appear that the southeastern and central Europeans as a group were the earlier settlers in the West, earlier even than those from Great Britain and the northern parts of the continent. Yet hasty generalization in this instance, as indeed with population figures of any kind, is unwarranted and misleading. As a matter of fact, immigration to this continent from Great Britain and northwestern Europe was somewhat earlier than that from the southeastern and central parts of the continent. The alternative explanation therefore seems much more probable: namely, that many of the original settlers from Great Britain and northern Europe had either died or retired by 1926, leaving the operation of their original holdings to Canadian born sons or relatives who had attained years of maturity. While the figures do not prove such to be the case, they strongly support such a suggestion. Furthermore, that portion of the data referring to farm operators of shorter Canadian residence than twenty years points to a tendency on the part of the southeastern and central European operator to stay on the farm long after the settler from Great Britain, northwestern Europe or United States would have retired from active farming operations and departed to the city or town.

FIGURE 166

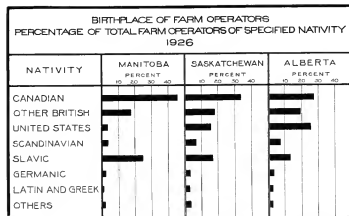


FIGURE 166.—In 1926, 34.1 per cent of the farms in the prairie region were operated by native Canadians; 31.2 per cent by continental Europeans; 18.5 per cent by other British born; and 17.7 per cent by United States born farm operators.

A crude index of the type of farming practised by the different nativity groups is furnished by the number of farms reporting different kinds of live stock. No information of course is available as to the relative numbers of the different animals reported, the emphasis being rather on the presence or, on what is more significant, the absence of certain kinds of animals. In Alberta and Saskatchewan less than 10 per cent of the farms were without horses, the southeastern and central Europeans showing the smallest proportions and the United States immigrants the largest. The range of variation, however, is very small. In Manitoba, on the other hand, a substantial proportion of the farmsteads are listed as having no horses. The numbers range from 11 per cent for British immigrants to over 20 per cent for the southeastern and central Europeans. The higher general average reflects the disproportionate number of small holdings in the province as a whole, and the absence of horses on so many as one-fifth of the farms operated by southeastern and central Europeans

## BIRTHPLACE OF FARM OPERATORS

FIGURE 167

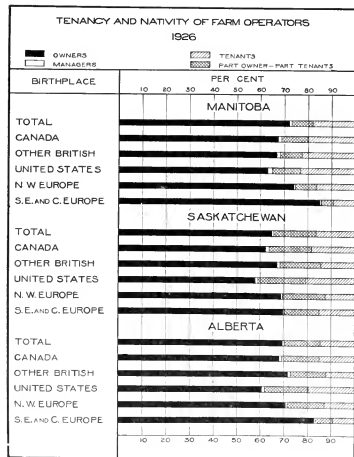


FIGURE 167.—In this connection it is significant that only 12 per cent of the Continental European born farm operators in the prairie region were on farms exceeding 480 acres, as against 15 per cent, 18 per cent and 23 per cent for those born in the British Isles, Canada and the United States.

(and on a proportion almost as great for the northwestern European born) indicates that abnormally large numbers of these settlers have taken up market gardening or the working of very small plots.

Milch cows, other cattle, swine and poultry are found on a greater percentage of the farms operated by the European born than of those occupied by either the native Canadians or settlers from Great Britain and the United States. Dairying to a greater or less extent and the raising of swine and poultry are particularly characteristic of southeastern and central Europeans. Any adequate explanation must take account of at least two circumstances:—first, the disproportionately large number of this nativity located in the sub-humid park belt, an area especially suited to mixed farming; and second, the perpetuation of the traditional old world type of agriculture admirably adapted to settlers possessing small capital and large families and accustomed to the lavish use of labour.

FIGURE 168

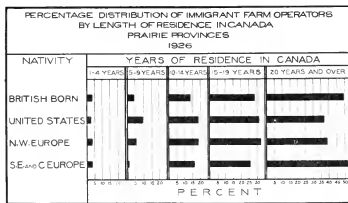


FIGURE 168.—Of the immigrant farm operators, the southeastern and central Europeans and the British born show the largest percentages resident in the country for 20 years and over. Note discussion in text.

FIGURE 169

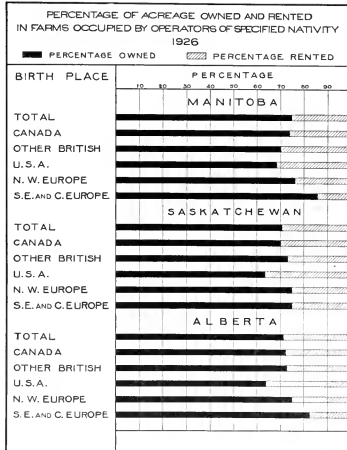


FIGURE 169.—At the last census of the Prairie Provinces, southeastern and central Europeans owned between 75 per cent (Saskatchewan) and 86 per cent (Alberta) of the land they tilled; United States immigrants from 63 per cent (Saskatchewan) to 68 per cent (Manitoba). The figures for the other nativities ranged between these limits.

# BIRTHPLACE OF FARM OPERATORS

87

FIGURE 170

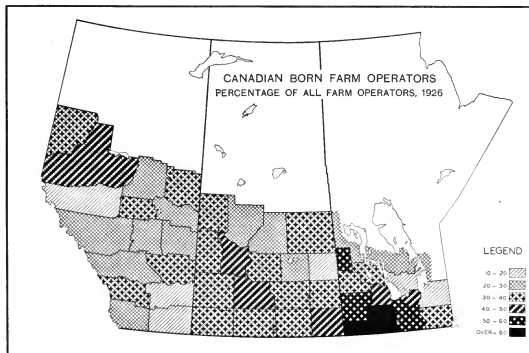


FIGURE 171

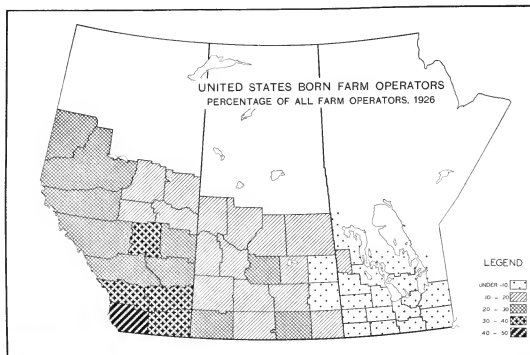


FIGURE 172

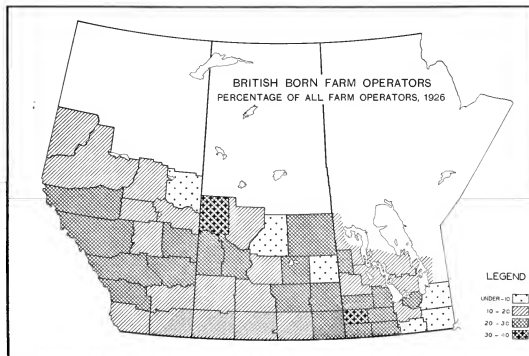
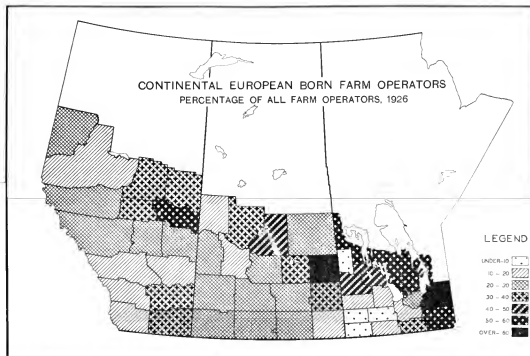


FIGURE 173



FIGURES 170-173.—All four maps are on the same scale and are therefore, directly comparable. Striking differences appear in the relative importance of the several classes of immigrants among the farm operators of the three provinces. For instance, as few as 4 out of every 100 farms in Manitoba are operated by immigrants from the United States, and as many as 25 per 100 in Alberta. Conversely, farmers of Slavic birth occupy almost 25 per cent of the farms in Manitoba as against 13 per cent in Alberta. These maps should be studied in conjunction with those on size of farms and types of farming.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 174

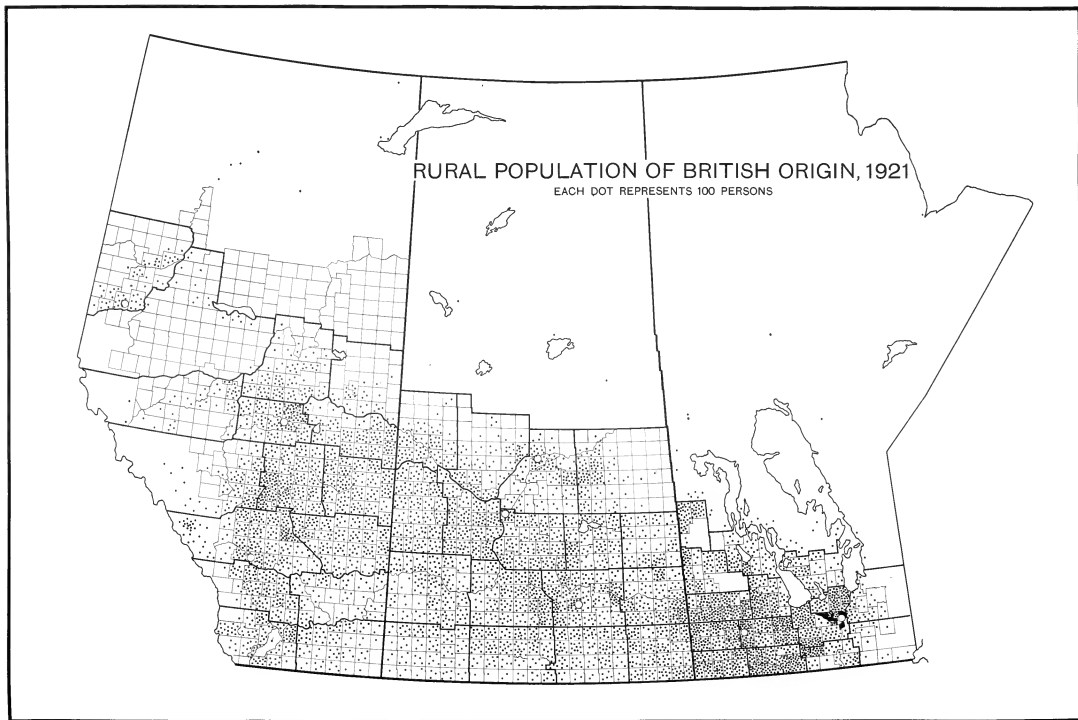


FIGURE 174.—Taking the three provinces as a whole, the percentage of Anglo-Saxon origin has been fairly well maintained during the past 25 years. This result has been achieved by immigration not only from the British Isles and the United States but from eastern Canada. The large immigration of British stock helped to offset the higher fertility of settlers from Continental Europe, especially central and eastern Europe. Only 54 per cent of the Anglo-Saxons in the region live in rural parts as compared with 74 per cent for the remainder of the population. The Anglo-Saxons are scattered more uniformly over the prairies than any other origin group.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 175

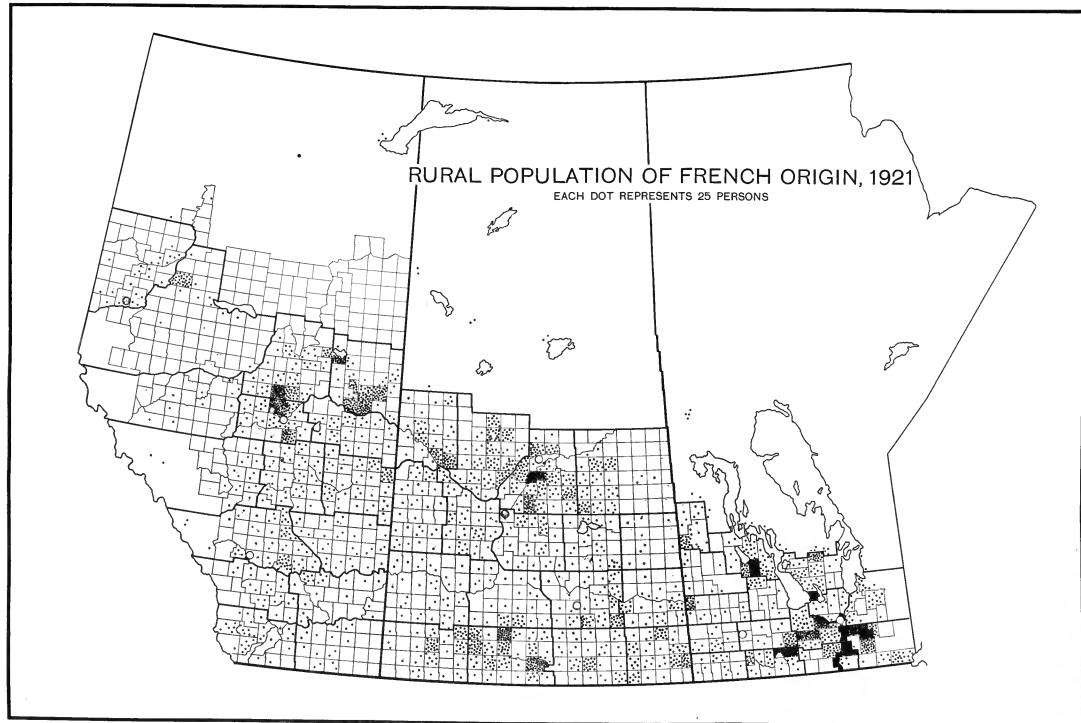


FIGURE 175.—Persons of French racial origin constituted 6 per cent of the population of the Prairie Provinces (1926) as compared with 28 per cent of the population of the Dominion as a whole (1921). The French is the fifth largest origin group in the region and approximately 72 per cent are reported (1926) as of rural domicile. The percentage Canadian born (84 per cent) is higher than that for the Anglo-Saxon (67 per cent) or any other origin group in the West reflecting, in part, the predominantly eastern Canadian origin of adult settlers. Except for certain marked concentrations in the vicinity of Winnipeg, at the south of lakes Manitoba and Dauphin, south of Prince Albert and north of Edmonton, the rural French population is fairly widely distributed over the region.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 176

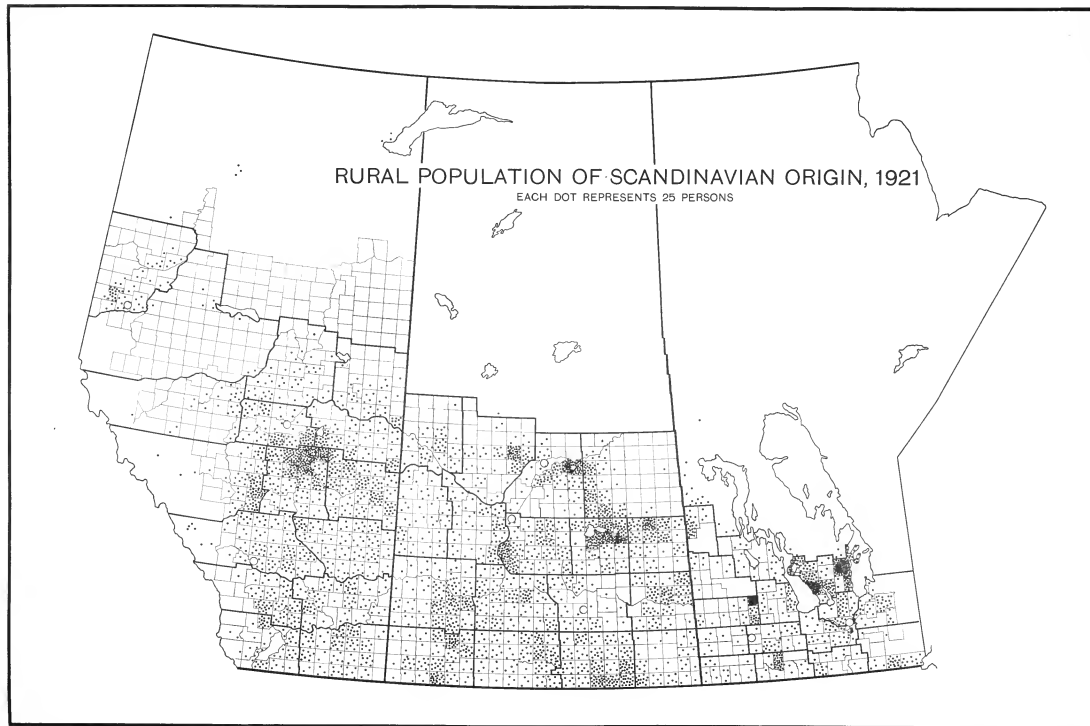


FIGURE 176.—The Scandinavian group includes those of Danish, Icelandic, Norwegian and Swedish origin. Together they represent the fourth largest population group in the Prairie Provinces, totalling 138,000 in 1926, of whom 108,000 or 78 per cent were listed as rural. This map is notable for the very wide distribution of the dots. Only in the case of the old Icelandic settlement does there appear any marked tendency toward rural concentrations. As a group, the Scandinavians show the largest surplus of males in the adult population (60 per cent) and the smallest proportion Canadian born (43 per cent). Large numbers of Norwegian, Danish and Swedish residents in the region emigrated to western Canada from the adjacent States.



FIGURE 177

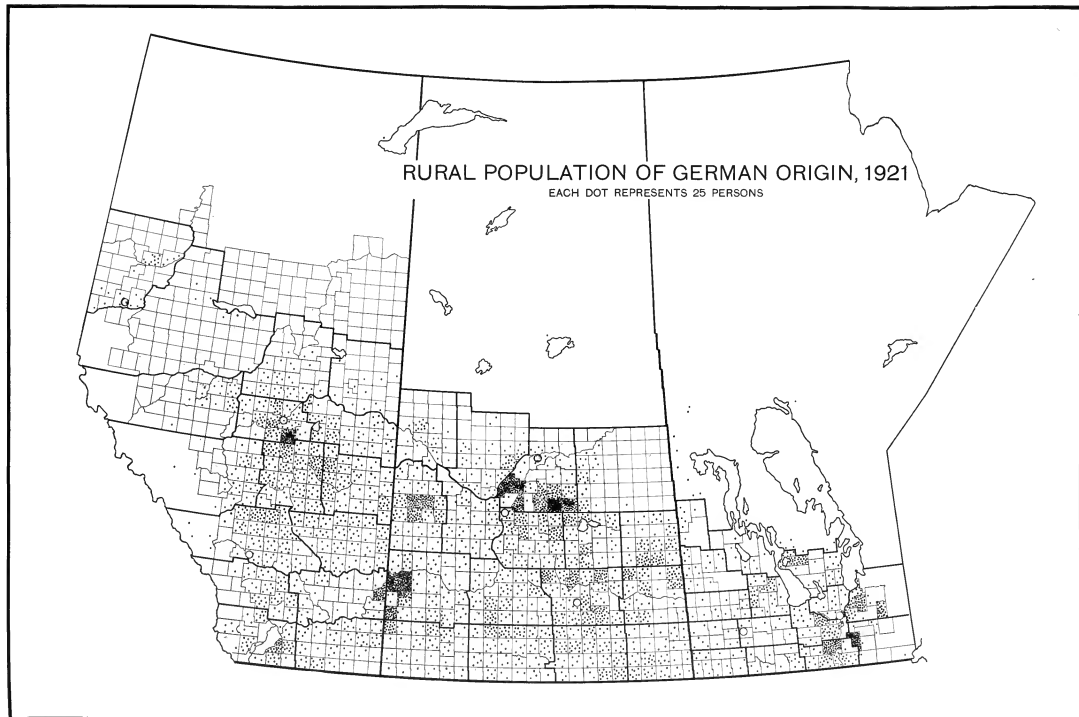


FIGURE 177.—In 1926, 49 out of every 100 rural residents in Saskatchewan were of non-Anglo-Saxon and non-French racial origin; 45 in Alberta and 41 in Manitoba. The Germans ranked second only to the Anglo-Saxons in numerical strength, totalling 170,000, of which number 75 per cent lived in the country. The moderate surplus of males in the adult population (22 per cent) coupled with an average proportion Canadian born (56 per cent), is indicative of a family type of immigration. This group is notable for its general distribution over the region, noticeable concentrations occurring in only a few localities such as the Humboldt, Carrot river and Boreal districts in Saskatchewan, Black Mud municipality in Alberta and La Broquerie municipality in southeastern Manitoba.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 178

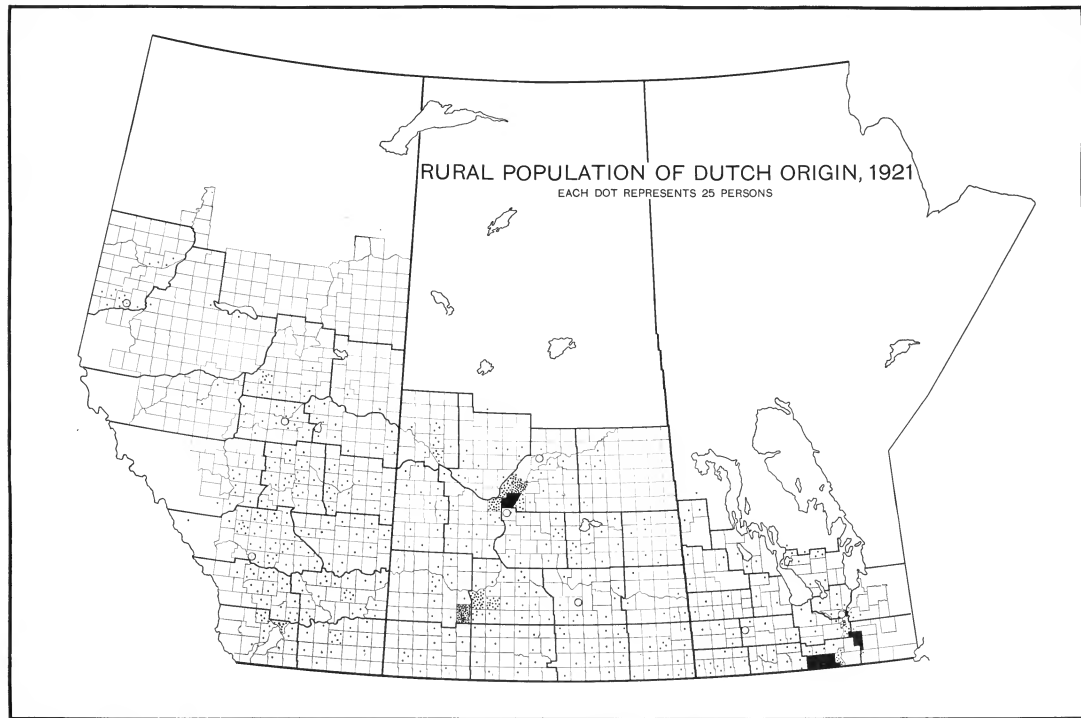


FIGURE 178.—Most of those classed as of Dutch origin—particularly in Manitoba and Saskatchewan—are Mennonites who account for the principal block settlements appearing on the above map. As a group, the Dutch show the highest proportion rural (82 per cent) and the smallest surplus of males in the adult population, 22 per 100 females. The proportion Canadian born is equal to that for the Anglo-Saxon stock (67 per cent) and second only to that of the French. The above percentages are for the year 1926. Both early date of immigration and family settlement are contributory causes.

# RACIAL ORIGIN OF RURAL POPULATION

93

FIGURE 179

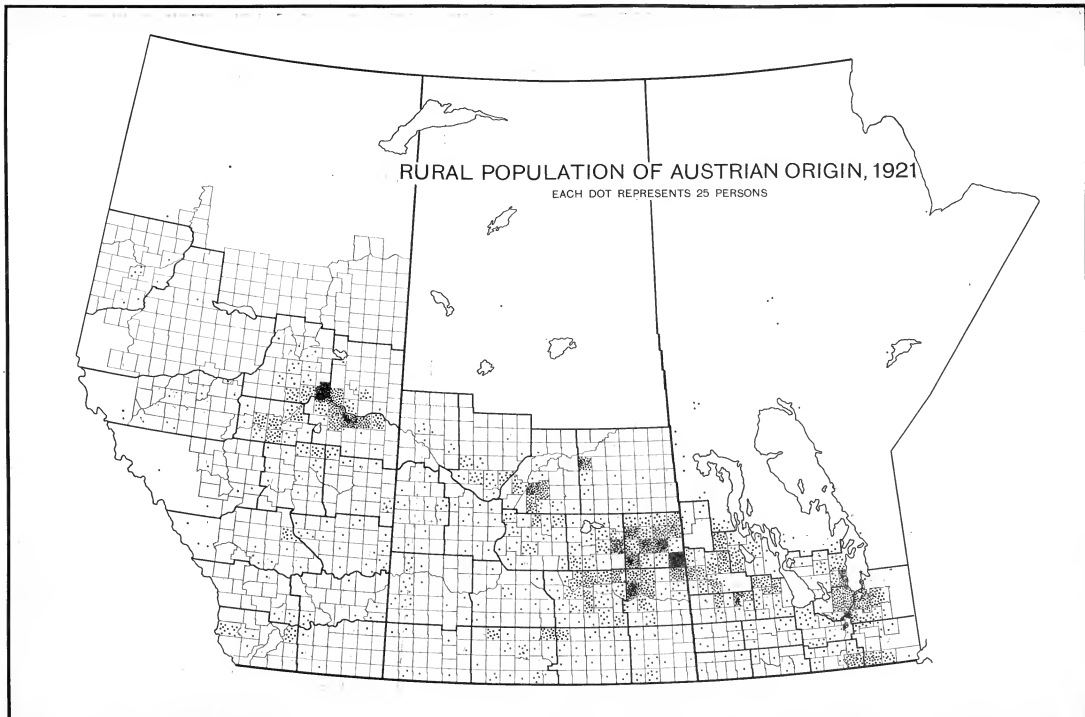


FIGURE 179.—The Austrian origin group ranked ninth in point of numbers in the Prairie Provinces at the date of the last quinquennial census (1926). Persons reporting themselves as of this origin totalled somewhat over 46,000 of whom 75 per cent were resident in rural districts, a proportion equal to that for the German but appreciably less than those for the Dutch, Ukrainian, Russian and Scandinavian origin groups. The surplus of adult males per 100 females (50) was exceeded only by that for the Scandinavian group. Yet the proportion Canadian born (57 per cent) was relatively high, as in the case of those of Polish origin. The great majority of the Austrian rural settlements are situated along the northern fringe of the prairies in the moister park region.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 180

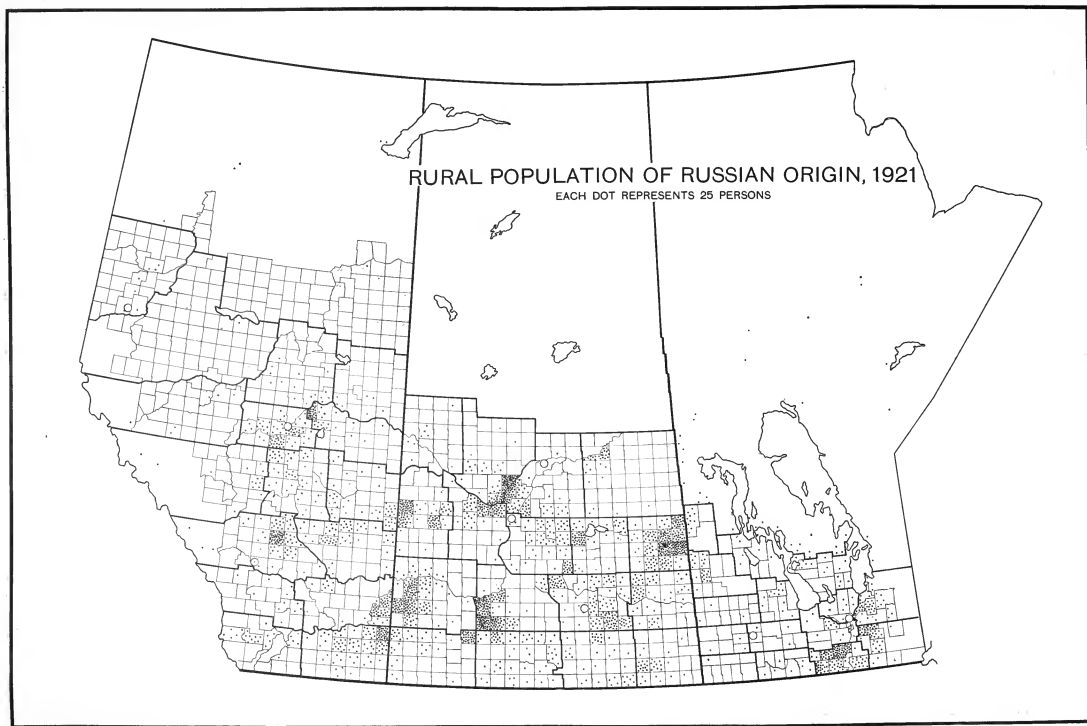


FIGURE 180.—Persons reporting themselves as of Russian origin totalled 71,000 in 1926, a figure approximately half that for the Scandinavians, the origin group immediately preceding the Russian in order of magnitude. Approximately the same proportion was rural (78 per cent in 1926) but there was a much smaller surplus of adult males, only 28 per 100 adult females. The latter figure reflects the early prevalence of family immigration especially in the rural parts. In 1926, 55 per cent of the population of Russian extraction in the region was Canadian born. In contrast with the rural distribution of the Ukrainians and Austrians, numerous Russian settlements are located in the drier prairie regions as well as in the moister park belt.

# RACIAL ORIGIN OF RURAL POPULATION

95

FIGURE 181

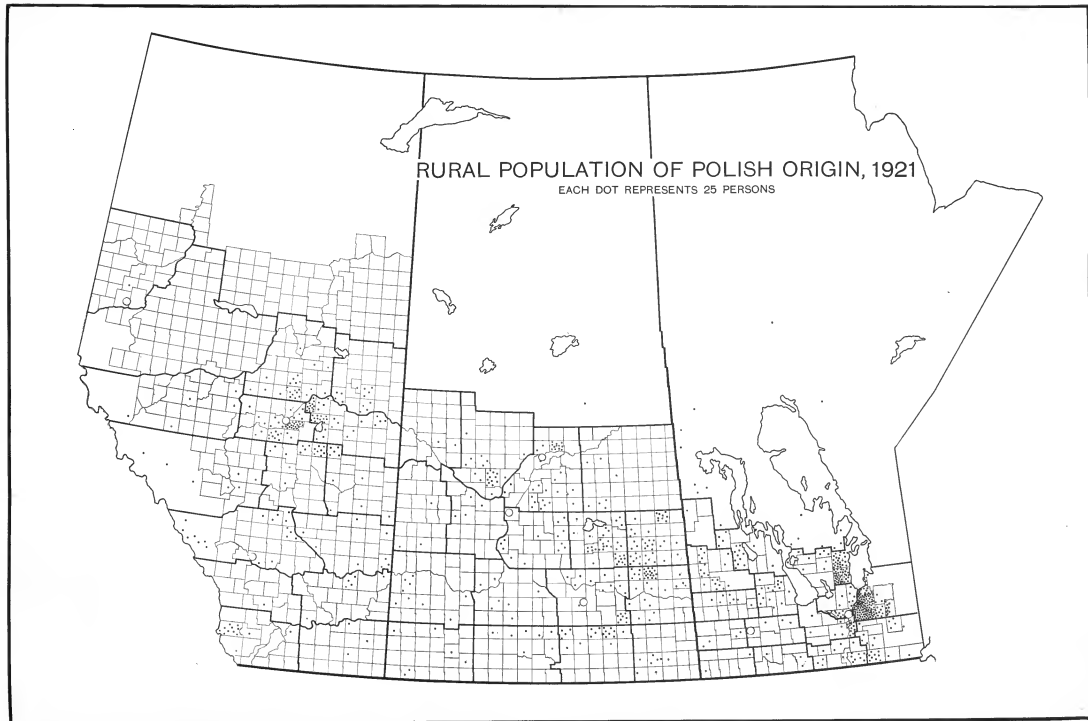


FIGURE 181.—In 1926, the population of Polish origin in the Prairie Provinces totalled 51,000, of whom 35,000 or 69 per cent, were reported as living in rural districts. Of the principal non-Anglo-Saxon and non-French origin groups, the Polish is the least rural. The comparatively high figure of 47 surplus adult males per 100 adult females is indicative of a very considerable post-war movement of single adult males to Western Canada. In spite of this marked inequality of sexes, however, 85 per cent of the group are reported Canadian born. As with the Ukrainians and Austrian groups, settlers of Polish origin are located for the most part in the park belt.

# RACIAL ORIGIN OF RURAL POPULATION

FIGURE 182

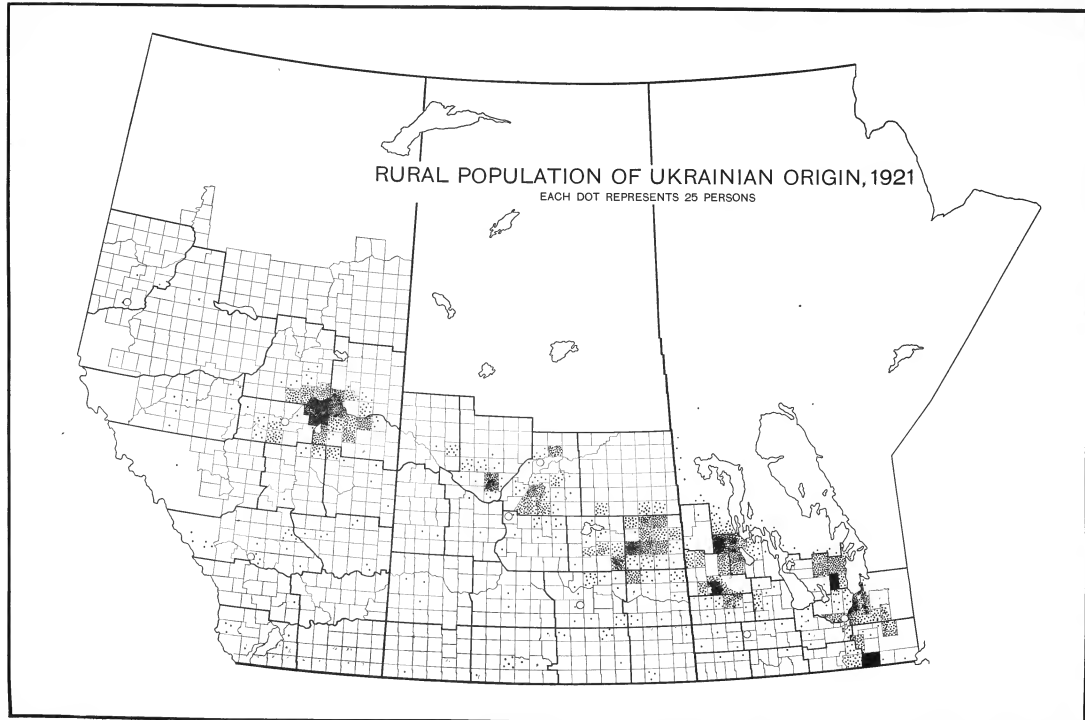


FIGURE 182.—In 1926, Slavic peoples constituted 58 per cent of the rural population of foreign racial origin in Manitoba, and 42 per cent in Saskatchewan and Alberta. The Ukrainian (including those reported as Bukovinian, Galician, Ruthenian and Ukrainian) is the largest origin group among the Slavs and the third largest in the prairie region. They totalled 151,000 in 1926 of which number 80 per cent were rural as compared with 63 per cent for the total population. A glance at the adjacent map reveals a pronounced proclivity for group settlement in rural areas. These settlements are confined almost exclusively to the northern park belt area. A surplus of 36 males per 100 adult females reflects the considerable post-war immigration of unattached males, while the relatively high proportion Canadian born for the group as a whole (60 per cent) is indicative of early family settlement and high fertility.

WITH the slackening of immigration and the increase in the proportion of Canadian born children in the population, illiteracy was reduced by almost half in the ten-year period preceding 1926. Credit for this splendid accomplishment goes to the school. The Governments of all three provinces have consistently pursued a policy of promoting the rapid establishment of schools, especially in the rural areas. It has been a costly process but its justification is found in the progress revealed by Figs. 183 and 184.

The crude figures show an appreciable difference between the sexes in the matter of illiteracy. "This differentiation is not a sex phenomenon but one due to the nature of the distribution of the sexes in respect of age, nativity, racial origin, and rural and urban residence."<sup>1</sup> A wide spread also appears between illiteracy in rural and urban districts. Superior educational advantages and more favourable nativity and origin composition of the urban population, i.e., from the standpoint of literacy, are the chief factors contributing to the generally lower level of illiteracy percentages for urban parts. Of the two influences the latter is of the greater importance.<sup>1</sup>

That place of birth and upbringing has an important bearing on illiteracy is suggested by Fig. 185 which shows the European born with between ten and twenty times larger proportion unable to read or write than are found among native Canadians in the Prairie Provinces. While this graph correctly associates the problem of illiteracy with immigration from Europe and Asia, it greatly over-emphasizes the importance of nativity.

Perhaps the most interesting and instructive chart on this page is Fig. 186, for it deals with the two chief explanations of illiteracy (1) age distribution, and (2) racial origin. In almost every instance the proportion of illiterates among those over fifty years is overwhelmingly large as compared with that of the age group of 10-14 years for instance. Indeed, within the origin groups illiteracy increases almost consistently with age. The higher rates at the older ages indicate the inferior educational status of immigrants before the literacy test was introduced into the Immigration Act in 1910. It also bears witness to the futility of expecting any material change in the educational status of the adult immigrant through residence in Canada. The generally low rates for ages 10 to 14, on the other hand, point to the commendable effectiveness with which the public school is now solving the problem in the younger generation. The growth of these educational facilities is to some extent reflected in the declining illiteracy with decreasing ages from middle to early adult life.

Yet it is not merely because of an age distribution more favourable to literacy that the Ukrainian, Oriental, Austrian, Roumanian, Polish, Russian, Hungarian and Italian races of the Canadian West have proportions illiterate from 20 to 60 per cent greater than the British race. To be sure age is a factor, but a cursory examination of Fig. 186 establishes the fact that in all age groups, including the school ages of 10 to 14, the percentages are several times larger. Of the foreign origins the Scandinavians show the least illiteracy, indeed the Icelanders between the ages of 10 to 19 have fewer illiterates than the Anglo-Saxon stock. The French in these provinces are less illiterate than the central and southeastern European but more so than foreign races of northwestern Continental European origin.

<sup>1</sup> M. C. MacLean, Census Monograph, "Illiteracy and School Attendance in Canada," page 7.

FIGURE 183

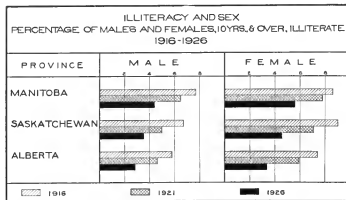


FIGURE 183.—Illiteracy has declined, as school facilities have become more adequate and as the numbers attending have increased.

FIGURE 185

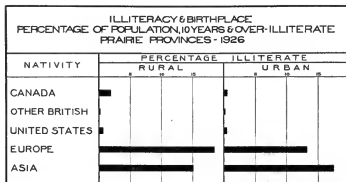


FIGURE 185.—Country of birth is by no means entirely responsible for the differences in illiteracy depicted above. Age and race are important factors.

FIGURE 184

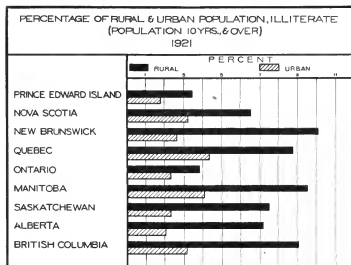
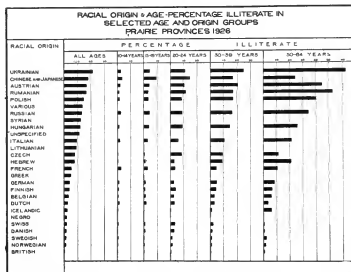


FIGURE 184.—Illiteracy is generally higher in rural than in urban districts. In the matter of illiteracy, Saskatchewan and Alberta compare favourably with all other provinces except Ontario and Prince Edward Island. Manitoba shows the highest illiteracy in the West. The large proportion of Slavs is a major cause.

FIGURE 186



## ILLITERACY

FIGURE 187

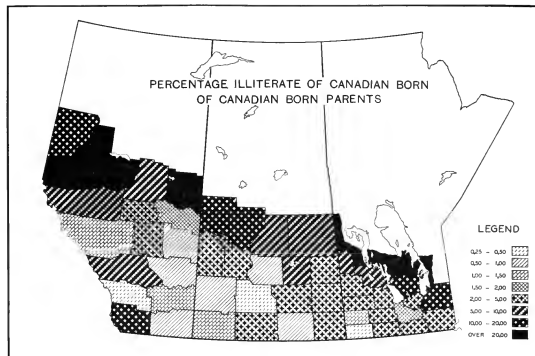
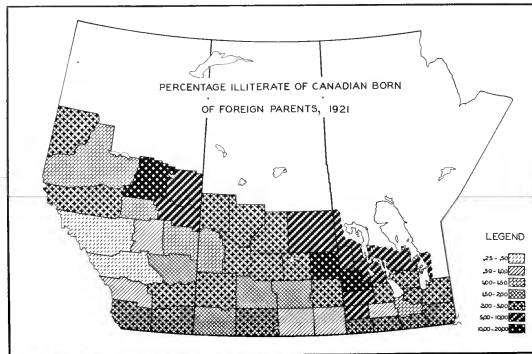


FIGURE 189



FIGURES 187-190.—These maps direct attention to the extent of illiteracy among the Canadian born. The children of British born parents (outside Canada) are least illiterate; those with one parent British and one parent foreign born, next; and those with both parents foreign born, still more illiterate. The high percentage of illiteracy among the Canadian born parents in the West is attributable to the presence of relatively large numbers of native Indians (and half breeds), few of whom can read or write. Illiteracy is very rare among the second or third generation Canadians of Anglo-Saxon or northern European extraction.

FIGURE 188

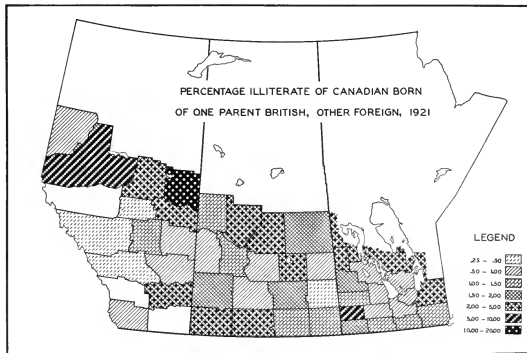
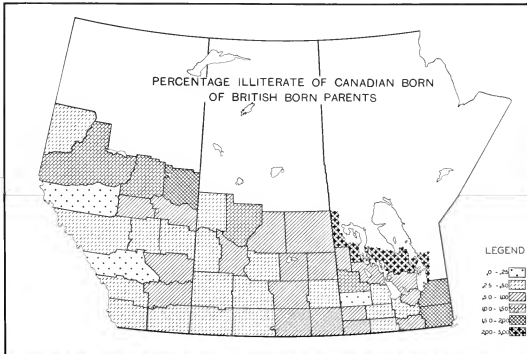


FIGURE 190



The children of British born parents (outside Canada) are least illiterate; those with one parent British and one parent foreign born, next; and those with both parents foreign born, still more illiterate. The high percentage of illiteracy among the Canadian born parents in the West is attributable to the presence of relatively large numbers of native Indians (and half breeds), few of whom can read or write. Illiteracy is very rare among the second or third generation Canadians of Anglo-Saxon or northern European extraction.



THE task of providing elementary schooling for the rapidly growing and widely scattered population of the Prairie Provinces has been one of colossal proportions and has taxed to the utmost the energies and resources of the people. The responsibility for the promotion and administration of public education rests upon the Provincial Governments. Through their Departments of Education and staffs of inspectors they direct public instruction throughout their respective jurisdictions and give very substantial financial aid, especially to the rural municipalities, in the establishment and operation of public schools. In 1926, the total cost of elementary and secondary education to the people of the Prairie Provinces was almost \$37,000,000, a sum greater by a considerable margin than the combined ordinary expenditures of the Provincial Governments including educational subsidies of over \$4,000,000. Public education represented a levy of over \$18 on every man, woman and child in the area and an expenditure of more than \$72 per scholar attending school. In considering the problem of elementary education in the West it is well to remember that with the exception of Quebec, the prairie region has a larger proportion of its population of school age than any other part of Canada.

An appreciation of the educational progress of the West is best obtained from a detailed survey of the development in a typical province. Saskatchewan is selected as being the largest and geo-

FIGURE 191

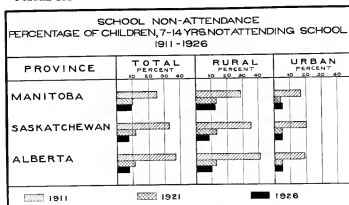


FIGURE 191.—In the fifteen year period, 1911-1926, the proportion of children 7-14 years not attending school has been reduced from 37 per cent in Alberta and 33 per cent in Saskatchewan to 8 per cent for both provinces, and in Manitoba from 26 per cent to less than 10 per cent.

graphically central in the area. Settlement in this province is scattered over an area almost twice as large as that occupied by the rural population of Ontario, and between 1911 and 1926, the population increased 66 per cent. In the same period the number attending school multiplied three fold. In 1911, about as many children were at school as in the province of New Brunswick; by 1925, the total enrolment was greater than in the whole of the Maritimes. Increased regularity of attendance and a lengthening of the average number of days of the school term have gone hand in hand with the establishment of new schools and the enlarging of the old. At the end of the first decade of the century the average daily attendance was 53.0 per cent of the pupils enrolled; fifteen years later it had increased to 71.3 per cent. In other words, the gross average daily attendance in all schools increased four-fold in the period as compared with a threefold increase in enrolment. In 1911, many of the rural schools of the province were open only in the summer months. By 1926, the summer school had become virtually a thing of the past. At the same time secondary education had become more general. In 1926, 9 out of every 100 pupils were attending secondary schools as against 3 only five years earlier. The number of teachers in training quadrupled in the fifteen years, 1910-1925, and the proportion studying for first class certificates doubled in one decade, 1910-1920. The achievement of the West in the field of public education is probably without parallel in the annals of history.

FIGURE 192

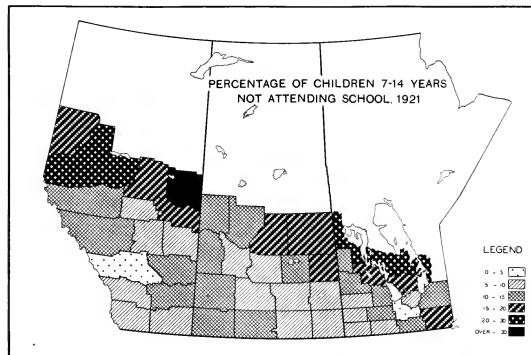
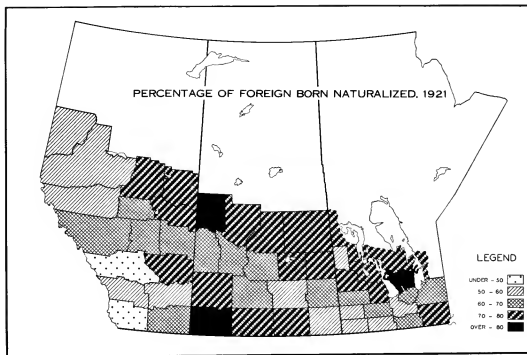


FIGURE 193



FIGURES 192, 193.—The percentage of children not attending school is greater along the northern fringe where settlement is more recent and the proportion of the more illiterate races is greater. The proportions of the foreign born naturalized are higher in census divisions where the population is largely rural. Homestead regulations have been important in stimulating naturalization in the park region; long Canadian residence is a contributory cause of the high percentages in southwestern Saskatchewan.

IN examining Figs. 194 and 195, it is well to keep in mind both the provisions of our naturalization laws and the variety of other influences affecting the percentages. The main provisions of the Naturalization Act are as follows: (1) If the head of the family is naturalized, the children under 21 years of age automatically become Canadian citizens, (2) if the husband is naturalized, the wife also assumes Canadian citizenship, (3) if the head of a family immigrates to Canada and becomes naturalized, the wife and children under 21 become naturalized citizens on arrival in Canada, and (4) five years' residence is required.

Sex distribution, rural and urban distribution, length of Canadian residence, and differences in occupation, also affect naturalization. Larger percentages of females than of males are naturalized because greater proportions have married, and taken up permanent residence in Canada. Rural life is comparatively more favourable to naturalization. In this connection the influence of the homestead laws, economic and sentimental attachment to the land, and the relative immobility of agricultural settlers should be mentioned as stimulating naturalization.

With these considerations in mind, it is easier to understand Fig. 194. The high percentages naturalized in the West are attributed to

rural residence and agricultural occupations; similarly high proportions in the Maritimes are due to early settlement and a preponderance of immigrants of racial origins which assimilate readily. The low figures for Ontario are attributable in the main to urban settlement

FIGURE 194

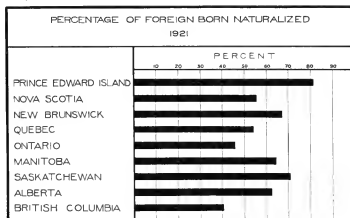


FIGURE 194.—Naturalization has been much more rapid in the prairie region than in the more urban East.

FIGURE 195

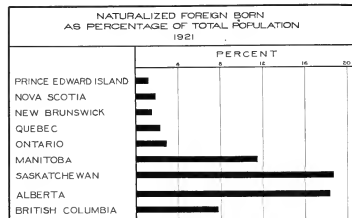


FIGURE 195.—In Saskatchewan, naturalized foreign born constitute a proportion of the population nearly 6 times larger than in Ontario and over 15 larger than in Prince Edward Island.

## DWELLINGS

A DWELLING as defined in the census is any structure which provides shelter for a human being. It need not be a house in the usual sense of the word, but may be a room in a factory, a store or office building, a railway car or the like. While the classification includes structures other than houses, nevertheless, in the prairie region one naturally thinks of "house" when the word "dwelling" is used, and quite rightly so, for the great majority of buildings providing shelter for human beings actually are houses in the ordinary sense of the term. This is especially true in the rural parts.

In the Prairie Provinces only 29 per cent of the dwellings are in the 6-10 room group, as compared with 67 per cent in the older and more urban province of Ontario, for instance; indeed in Saskatchewan and Alberta the proportion is as low as 25 per cent. On the other hand, a very considerable number of dwellings in the West have fewer than 4 rooms (38 per cent) as compared with Ontario (7 per cent).

At least three factors must be considered in accounting for such differences: (1) Date of settlement, (2) Rural and urban distribution of the population, and (3) Climatic differences. The last factor is incapable of statistical measurement, yet the rigors of the western winters and the high cost of heating the houses through the long months of cold weather make for strict economy in the matter of housing space and probably cause some reduction in the number, as well as in the size, of rooms. Fortunately, a much more definite idea may be obtained concerning the influence of date of settlement. In 1911, more than a quarter of the houses in Saskatchewan and Alberta

had only one room; by 1921, this proportion had been cut in three. A similar, though much smaller, reduction occurred in the percentage of two room dwellings. At the same time the numbers with 3 to 10 rooms showed more than proportionate increases. Inadequate housing facilities characterize pioneer agricultural settlements just as urban congestion features the later stages of a country's development.

Urban dwellings have, on the whole, a considerably greater number of rooms. The 1921 census reported less than 8 per cent of such dwellings with as few as one or two rooms as against 31 per cent for areas outside incorporated cities, towns and villages. Conversely, an average of 45 per 100 inhabited structures in urban parts were shown as having 6 to 10 rooms, while the same class accounted for only 20 per cent of all rural dwellings.

Estimates have been made from 1921 data of the number of rooms per person for all nine provinces. These estimates appear in Table 23 below, and throw additional light on housing conditions in the region. In no part of Canada does over-crowding exist to so great an extent as is found in the rural parts of the Prairie Provinces. The housing accommodation amounts to little better than four-fifths of a room per person. Only in the French province of Quebec, and in British Columbia is this situation approximated, and even in these provinces the average exceeds one room per person.

<sup>1</sup> British Columbia has a large rural Oriental population.

It is of interest that in no province except Nova Scotia is the rural population so well housed as the urban, at least in so far as the number of rooms per person may be taken as a criterion; and further, that only in the cities and towns of Quebec does one find urban crowding so common as in the towns and cities of the West. Here again climate is a contributory cause of some importance, and to that may be added the large floating boarding-house population in western cities as well as the considerable foreign population. In the foreign districts over-crowding is very general.

TABLE 23

ESTIMATED NUMBER OF ROOMS PER PERSON OF (1) RURAL,  
(2) URBAN DOMICILE, BY PROVINCES, 1921

Province	Rural, rooms per person	Urban, rooms per person
Prince Edward Island.....	1.40	1.45
Nova Scotia.....	1.36	1.22
New Brunswick.....	1.21	1.34
Quebec.....	1.02	1.11
Ontario.....	1.41	1.42
Manitoba.....	0.88	1.12
Saskatchewan.....	0.82	1.14
Alberta.....	0.87	1.19
British Columbia.....	1.02	1.24

FIGURE 196

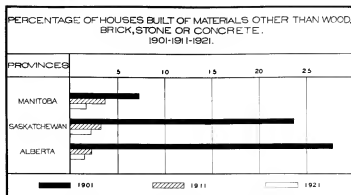
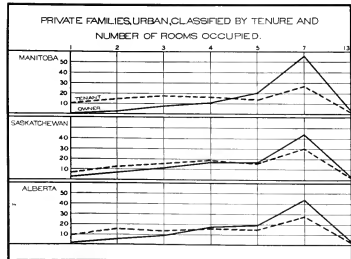


FIGURE 196.—The first decade of the century witnessed the passing of the sod home from the face of the prairies. About 95 per cent of the houses are now built of wood.

FIGURE 197

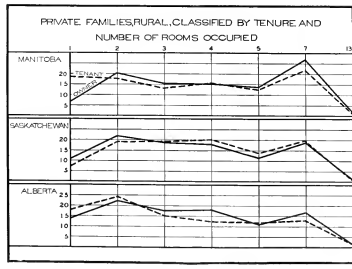


(The vertical scale is in percentages and the horizontal scale is number of rooms.)

FIGURE 197.—In the towns and cities tenants occupy the smaller dwellings. In urban Manitoba, for instance, over 50 per cent of the tenants were in one to four room dwellings as compared with only 21 per cent of the owners.

Marked differences also appear in the proportions of families owning their own homes. (Fig. 198.) Taking the West as a whole, nearly 82 per cent of the families in the country own the dwellings in which they live, a figure which compares with less than 51 per cent for incorporated urban centres. The fact that this difference is not unexpected detracts nothing from its significance. When four-fifths of the rural homes are owned by the people who dwell therein, a situation exists which is unfavourable to population movement yet at the same time is conducive to the development of a deep sense of responsibility for and an intense interest in matters of public policy—a sense of responsibility and an interest born of a tangible and permanent stake in the country itself. This difference in outlook and attitude is pertinent to an understanding of the political and social history of any region and especially so in the Canadian West where the population is as yet predominantly agricultural. In Manitoba, the oldest of the western provinces, tenancy has advanced further both in urban and rural parts than in other sections of the West.

FIGURE 198



(The vertical scale is in percentages and the horizontal scale is number of rooms.)

FIGURE 198.—In Manitoba and Alberta, the mean size of dwelling is smaller for rural tenants than for rural owners; the reverse obtains in Saskatchewan. The explanation is probably to be sought in differences in the types of agriculture, progress of settlement and the racial origin of the populations.

Space does not permit a discussion of the number of children per family in rural and urban parts. Many factors contribute to the interesting results presented in Figs. 199 and 200, and they are inserted without explanation, merely for the purpose of drawing attention to the fact that significant differences do exist.

FIGURE 199

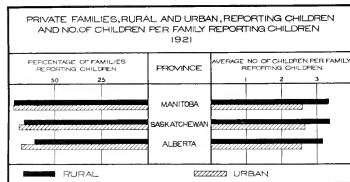


FIGURE 199.—More of the families in the towns and cities of western Canada reported children in 1921, yet the average number of children (per family reporting children) was smaller in the urban than in the rural districts.

FIGURE 200

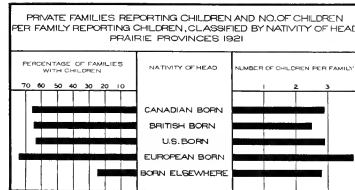


FIGURE 200.—Racial origin, rural and urban distribution, social and economic influences, age distribution, the numbers of bachelors with independent establishments (called as "families" in the census), and probably other factors must be taken into account in explaining the differences shown in the above chart.

## DWELLINGS

FIGURE 201

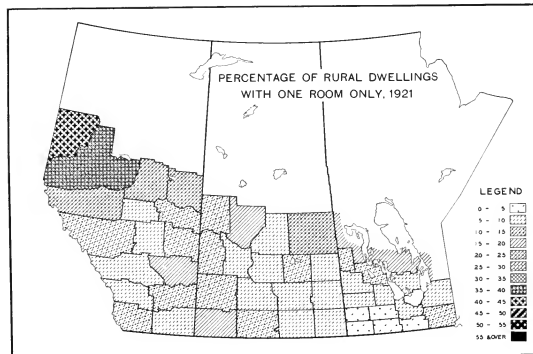


FIGURE 202

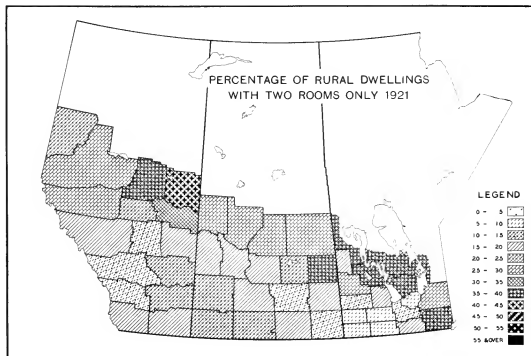


FIGURE 203

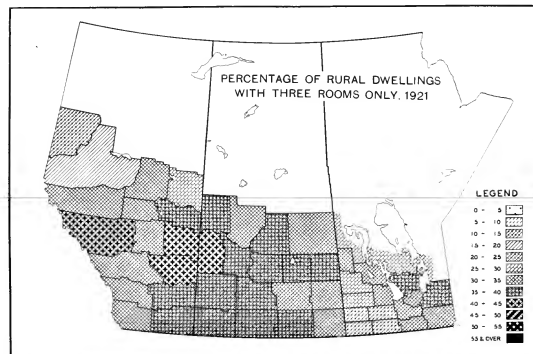
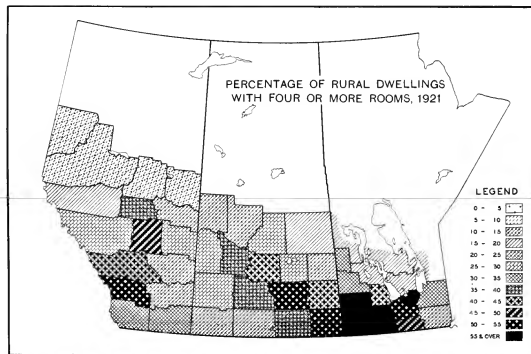


FIGURE 204



FIGURES 201-204.—These maps portray the development of housing accommodation in a new agricultural region. The Peace River district, where settlement is most recent, has the largest proportion of one room houses. In the northern park region where settlement is less recent than in the Peace but more recent than in other parts of the West, one finds larger proportions of two room houses. In the older established areas of Manitoba, central Saskatchewan and Alberta, larger houses are relatively more numerous. While date of settlement is the controlling factor, nativity is also related to the size of houses.

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